

FY17

<u>Description</u>	<u>Approval</u>	<u>Closure</u>
Base Growth – Install Main	Page 1 of 224	Page 11 of 224
Base Growth – Install Services		
Base Growth - Install Meter/Regulator		
Base Growth – Fitting		
Base Growth – Meter Purchase/Operations	Page 17 of 224	Page 26 of 224
Purchase Meters Replacement		
Gas System Reinforcement	Page 32 of 224	Page 43 of 224
City State Construction - Non Reimbursable	Page 48 of 224	Page 56 of 224
City State Construction – Reimbursable		
Corrosion	Page 62 of 224	Not Required
Pipeline Integrity	Page 65 of 224	Not Required
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Leak Prone Pipe	Page 71 of 224	Page 83 of 224
Main Replacement – Maintenance	Page 89 of 224	Page 97 of 224
Service Replacements – Leaks		
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CI Joint Encapsulation	Page 104 of 224	Page 112 of 224
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I&R Reactive Programs/CNG	Page 134 of 224	Page 143 of 224
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Pressure Regulating Facilities	Page 164 of 224	Page 170 of 224
System Automation	Page 176 of 224	Page 184 of 224
Allens Ave Rebuild Line	Page 190 of 224	Project not complete
Allens Ave Filter/Separator		
Pressure Regulating Facilities Dey St.	Page 203 of 224	Project not complete
Cumberland LNG Decommissioning	Page 212 of 224	Project not complete
Equipment & Tools	Page 222 of 224	Not Required



Short Form Sanction Paper

Title:	FY17 Growth Blanket- Rhode Island Gas	Sanction Paper #:	USSC-16-080
Project #:	CRCC102, CRCC104, CRCC110	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	04/13/2016
Author:	Jeffrey Marshall	Sponsor:	Jim Cross, VP Sales & Program Operations
Utility Service:	Gas	Project Manager:	Dan Sancomb Bill Mycroft Stephanie Eddleston

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRCC102, CRCC104, CRCC110 in the amount \$16.344M with a tolerance of +/- 10% for the purposes of full sanction.

This sanction amount is \$16.344M broken down into:

- \$16.279M Capex*
- \$0.000M Opex*
- \$0.065M Removal*
- With a CIAC/Reimbursement of \$0.750M*

1.2 Project Summary

This program involves the installation of new main, services and meters to serve projected customer growth in the Rhode Island gas territory. The \$16.344M for FY17 will fund two parts of the growth program: (1) the installation of 1,500 services and (2) the installation of 49,550 feet of main associated with new customers.

2 Project Detail

2.1 Background

The Customer Organization is responsible for managing new gas customer connection requests and with other organizations delivers the service in a timely and efficient process. In FY17, with collaboration across multiple organizations that have a customer



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touch point, we have worked with the resource coordination team to build a growth plan in line with the entire gas work plan at a level that we can deliver to our customers and increase customer satisfaction.

This plan is intended to provide service for over 1,500 new gas customer accounts in Rhode Island. The estimated projected company annual revenue for the Rhode Island territory is \$2.755M for the FY17 plan.

2.2 Drivers

As a regulated utility we are required to offer delivery of service to prospective customers while obtaining a return on our investment that allows us to be profitable.

There are several factors that drive overall NDR projections and the associated capital/O&M expenditures:

- Rate Plans
- Fuel Pricing – oil versus natural gas
- Inventory levels and turnover ratios
- Saturation levels
- Marketing Lead performance
- Designs and resourcing that supports the delivery of capital at efficient pricing.
- Economic Conditions / Building Starts
- Gas system constraints

2.3 Project Description

The proposal is intended to establish the estimated FY17 Customer NDR (New Delivery Revenue) goal, \$2.755M, and the accompanying capital budgets of \$16.344M. The document takes into account current, and projected, market and pricing conditions and contains provisions should conditions worsen.

2.4 Benefits

We will be delivering clean, safe and affordable natural gas to residents and businesses in the state of Rhode Island. There is an environmental impact in regards to the reduction of oil as a heating fuel for these customers. The estimated revenue delivery for the 16/17 plan is \$2.755M, and the accompanying capital budgets of \$16.344M.

2.5 Business & Customer Issues

National Grid is balancing our commitment to deliver gas to new customers but have put the greatest emphasis on some of our mandated programs for FY17 to ensure we continue to offer safe and reliable service to our existing customers. The new customer



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demand has decreased due to oil prices as well as limited resource capabilities in FY15 and FY16 so we have developed the FY17 plan at a level that we think we can deliver while remaining fiscally balanced. Ongoing management of customer concerns is planned for FY17.

2.6 Alternatives

Alternative 1: Increase our marketing budget to help drive customer request to drive service and main installs. – This would deliver more services and main, we would spend more capital and add more revenue but at the risk of disappointing customers and falling short on our mandated programs.

Alternative 2: Focus only on prospective customers on main – This would have us focusing on bringing on main customers only. This would reduce the amount of main to be installed and lower our capital costs. This would probably have implications with the DPU and our prospective customers. This would also negatively affect our revenue.

2.7 Investment Recovery

Investment recovery will be handled through regular rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$3.419M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets



Short Form Sanction Paper

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC102	Project Type	New Residential Services	6.335
CRCC102	Project Type	New Residential Mains	4.587
CRCC102	Project Type	New Residential Fitting	0.502
CRCC102	Project Type	New Residential Meter Work	0.450
CRCC102	Project Type	New Marketing	0.300
CRCC104	Project Type	New Commercial Services	1.980
CRCC104	Project Type	New Commercial Main	0.775
CRCC104	Project Type	New Commercial Fitting	0.167
CRCC104	Project Type	New Commercial Meter Work	0.150
CRCC110	Project Type	New Reactive Main	1.098
Total			16.344

3.2 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
CRCC304	Base Growth - Meter Purchases	0.913
CRCC111	Gas System Reinforcement	4.812
Total		5.725

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	Regulatory agreements require National Grid to provide gas service and main. National Grid provides gas service using consistent up charge processes with targeted IRR returns across the portfolio.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	



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3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

3.6 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Project Closure

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-21 Gas Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	\$8.007M

4.1.1 If cost > approved Business Plan how will this be funded?

N/A



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4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CIAC/Reimbursement	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.750

CIAC calculated based on historical experience and changes to tariff on CIAC collections.

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2016/17	2017/18	2018/19	2019/20	2020/21	2021/22			
CRCC102	New Residential Services	Est Lvl (e.g. +/- 10%)	CapEx	-	6.270	-	-	-	-	-	-	6.270	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.065	-	-	-	-	-	-	-	0.065
			Total	-	6.335	-	-	-	-	-	-	-	6.335
CRCC102	New Residential Mains	Est Lvl (e.g. +/- 10%)	CapEx	-	4.587	-	-	-	-	-	-	4.587	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	4.587	-	-	-	-	-	-	-	4.587
CRCC102	New Residential Fitting	Est Lvl (e.g. +/- 10%)	CapEx	-	0.502	-	-	-	-	-	-	0.502	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	0.502	-	-	-	-	-	-	-	0.502
CRCC102	New Residential Meter Work	Est Lvl (e.g. +/- 10%)	CapEx	-	0.450	-	-	-	-	-	-	0.450	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	0.450	-	-	-	-	-	-	-	0.450
CRCC102	New Marketing	Est Lvl (e.g. +/- 10%)	CapEx	-	0.300	-	-	-	-	-	-	0.300	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	0.300	-	-	-	-	-	-	-	0.300
CRCC104	New Commercial Services	Est Lvl (e.g. +/- 10%)	CapEx	-	1.980	-	-	-	-	-	-	1.980	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	1.980	-	-	-	-	-	-	-	1.980
CRCC104	New Commercial Mains	Est Lvl (e.g. +/- 10%)	CapEx	-	0.775	-	-	-	-	-	-	0.775	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	0.775	-	-	-	-	-	-	-	0.775
CRCC104	New Commercial Fitting	Est Lvl (e.g. +/- 10%)	CapEx	-	0.167	-	-	-	-	-	-	0.167	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	0.167	-	-	-	-	-	-	-	0.167
CRCC104	New Commercial Meter Work	Est Lvl (e.g. +/- 10%)	CapEx	-	0.150	-	-	-	-	-	-	0.150	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	0.150	-	-	-	-	-	-	-	0.150
CRCC110	New Reactive Main	Est Lvl (e.g. +/- 10%)	CapEx	-	1.098	-	-	-	-	-	-	1.098	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	1.098	-	-	-	-	-	-	-	1.098
Total Project Sanction			CapEx	-	16.279	-	-	-	-	-	-	16.279	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.065	-	-	-	-	-	-	-	0.065
			Total	-	16.344	-	-	-	-	-	-	-	16.344



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4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	24.212	0.000	0.000	0.000	0.000	0.000	24.212
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.139
Total Cost in Bus. Plan	0.000	24.351	0.000	0.000	0.000	0.000	0.000	24.351

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	7.933	0.000	0.000	0.000	0.000	0.000	7.933
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.074	0.000	0.000	0.000	0.000	0.000	0.074
Total Cost in Bus. Plan	0.000	8.007	0.000	0.000	0.000	0.000	0.000	8.007

Note: Business Plan variance reflects net \$6.557M difference due to CIAC adjustment from budget equivalent to decreased spend (i.e, \$1.450M)

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	April 2016
Begin Work	April 2016
Complete Work	March 2017
Project Closure	June 2017

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
Investment Planning	Pat Pensabene	Endorses relative to 5-year business plan or emergent work



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Resource Planning	Alfredo Vidal	Endorses Resources, cost estimate, schedules
Project Management	Michael Michel	Endorses resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Horowitz, Philip Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David
Procurement	Art Curran
Control Center	Mark J. Eagan

6.1.3 List References

N/A

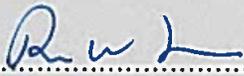
Short Form Sanction Paper



7. Decisions

The US Sanctioning Committee (USSC) at a meeting held on April 13, 2016:

- (a) APPROVED this paper and the investment of \$16.344M and a tolerance of +/- 10%
- (b) NOTED that Jim Cross has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature  Date 4/19/2016

Ross Turrini
Senior Vice President – Gas Process & Engineering

Short Form Sanction Paper



8 Other Appendices

8.1 Sanction Request Breakdown by Project
N/A



Spending Review

Title:	FY17 Growth Capital Plan- Narragansett	Sanction Paper #:	USSC-16- 080C
Project #:	Multiple Funding Projects – see Appendix	Sanction Type:	Spending Review
Operating Company:	Narragansett	Date of Request:	July 12, 2017
Author:	Eileen Reardon	Sponsor:	James A. Cross, Jr., VP Customer Connections
Utility Service:	Gas	Project Manager:	Steve Lannon, Jonathan Falls, Stephanie Eddleston

1 Executive Summary

This paper is presented to close multiple funding projects – see Appendix. The total spend was \$13.506M. The sanctioned amount for this project was \$16.344M at +/- 10% (project grade).

The final spend amount is \$13.506M broken down into:

- \$13.249M Capex*
- \$0.000M Opex*
- \$0.257M Removal*

With a CIAC/Reimbursement of \$0.434M CIAC

2 Project Summary

This program involves the installation of new main, services and meters to serve projected customer growth in Rhode Island. The original sanction document requested \$16.344M for FY17 to fund two parts of the growth program: (1) the installation of 1500 services and (2) the installation of 49,550 feet of main associated with new customers.



Spending Review

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple	Multiple	Capex	13.249
		Opex	0.000
		Removal	0.257
		Total	13.506
Total		Capex	13.249
		Opex	0.000
		Removal	0.257
		Total	13.506
Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	16.279
		Opex	0.000
		Removal	0.065
		Total Cost	16.344
Sanction Variance (\$M)			Total Spend
		Capex	3.030
		Opex	0.000
		Removal	(0.192)
		Total Variance	2.838

3.2 Analysis

The total annual spend for the program was 17% lower than the sanctioned amount of \$16.344M. The reason for this variance is lower main footage completed vs. planned. We installed 12,550 feet less than the original plan.

4 Improvements / Lessons Learned/Root Cause

Unit costs are being updated to improve accuracy. The main footage goal was adjusted mid-year to reduce overall expenditures.



Spending Review

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including, but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed;
- construction may cross multiple fiscal years;
- the work order closing process is within the late charge waiting period; or
- other accounting processes or final system closing activities have not yet completed.

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.



Spending Review

- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including, but not limited to:
 - design and/or construction have not yet completed;
 - construction may cross multiple fiscal years;
 - work has completed recently and as-builts have not yet been processed into the system; or
 - does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)

- (3) All lessons learned have been entered appropriately into the lesson learned database
 - Refer to Section 4 Improvements/ Lessons Learned/ Root Cause

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibility
Investment Planner	Pensabene, Patrick M. Quan, Philip	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

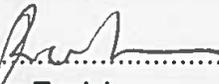
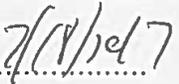
Function	Individual
Finance	Midkiff, Felicia
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul



Spending Review

7 Decisions

I approve this paper.

Signature  Date 

Ross Turrini
Senior Vice President, Gas Process & Engineering and Chief Gas Engineer



Spending Review

8 Appendix

Sanction Paper Number	Original Approved Amount	Re-sanction Approved Amount	FP Proj No	FP Proj Description	CAPEX	Removal	Opex	Total
USSC-16-080	\$16,344,000	\$0	CON0050	RI-Gas-Main New Grwth-RI Blanket	\$16,044		\$0	\$16,044
			CON0054	RI-Gas-New Serv Inst-RI Blanket	\$123,476	\$1,269	\$0	\$124,745
			CON0058	RI-Gas-New Mtr Sm-RI Blanket	\$634,948	\$67,694	\$0	\$702,642
			CRCC102	New Bus - Res -RI	\$9,709,889	\$146,905	\$0	\$9,856,794
			CRCC104	New Bus - Com -RI	\$2,481,177	\$39,343	\$0	\$2,520,520
			CRCC110	Growth reinforce- Reactive-RI	\$283,994	\$1,482	\$0	\$285,476
USSC-16-080 Total					\$13,249,528	\$256,693	\$0	\$13,506,221



Short Form Sanction Paper

Title:	FY17 Purchase Gas Meter Blanket – Rhode Island	Sanction Paper #:	USSC-16-053
Project #:	CRTC304	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	2/9/2016
Author:	Marina Perrone	Sponsor:	John Stavrakas, VP Gas Asset Management
Utility Service:	Gas	Project Manager:	Marina Perrone

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRTC304 in the amount \$3.177M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$3.177M broken down into:

- \$ 3.177M Capex
- \$ 0.000M Opex
- \$ 0.000M Removal

1.2 Project Summary

This project provides funding for the purchase and test of gas meters and associated instrumentation.

2 Project Detail

2.1 Background

This project includes the purchase, test, processing, and delivery of gas meters to support the Narragansett Electric Company mandated Meter Test/Replacement Program, growth targets, and continued CMS Operations. The estimated total number of meters required for FY17 is 12,281. The decrease of \$0.586M is to counterbalance ending year FY16 with a high inventory position.

2.2 Drivers



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The primary driver for meter and metering instrumentation purchases is compliance with state regulations governing meter accuracy and measurement of gas usage for customer bills.

Rhode Island PUC requirements stipulate removal from the field and testing of all residential gas meters that are 15 years old and all C&I meters that are 10 years old and associated remediation / retirement program of all such gas meters.

In addition to the mandated meter change program, meters are required to support growth targets, as well as to support Customer Meter Services (CMS) operational requirements (load change, meter and/or service relocations, damage, & stopped meters)

2.3 Project Description

This project includes the purchase, test, processing, and delivery of gas meters to support The Narragansett Electric Company Mandated Meter Test/Replacement Program, growth targets, and continued CMS Operations

2.4 Benefits

This project supports regulatory requirements, operations, and growth programs. In addition, the replacement of aging assets results is required to maintain and improve overall asset health (metering and billing accuracy).

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere.

2.6 Alternatives

Alternative 1: Base Case – Leave as is

This option is not viable as it would violate statutory/regulatory requirements, adversely impact customer satisfaction, and result in our inability to support growth targets.

Alternative 2: Revise Project Size and Scope – Partial Deferral

This option is not viable as it would result in a partial violation of statutory/regulatory requirements, or result in our inability to support growth targets.



Short Form Sanction Paper

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.667M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRTC304		Purchase Gas Meters-Grth	0.913
CRTC304		Purchase Gas Meters - Mand	2.264
Total			3.177

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A



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3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	Support Gas Meter requirements for Mandated Meter Change Program, and system growth targets
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

3.6 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
July 2017	Closure Paper



Short Form Sanction Paper

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17 – FY21 Capital Plan - Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

4.1.1 If cost > approved Business Plan how will this be funded?

N/A

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
CRT304	Purchase Gas Meters-Grth	Est Lvl (e.g. +/- 10%)	CapEx	-	0.913	-	-	-	-	-	-	0.913
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	0.913	-	-	-	-	-	-	-
CRT304	Purchase Gas Meters - Mand	Est Lvl (e.g. +/- 10%)	CapEx	-	2.264	-	-	-	-	-	-	2.264
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	2.264	-	-	-	-	-	-	-
Total Project Sanction			CapEx	-	3.177	-	-	-	-	-	-	3.177
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	3.177	-	-	-	-	-	-	3.177

4.4 Project Budget Summary Table



Short Form Sanction Paper

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	3.177	0.000	0.000	0.000	0.000	0.000	3.177
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	3.177	0.000	0.000	0.000	0.000	0.000	3.177

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Approval	February 2016
Provide Vendors with delivery schedules for FY16-17	March 2016
Monitor Inventory Levels	Monthly
Project Complete	March 2017
Project Closeout Report	July 2017



Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities	Area
Investment Planner	Pensabene, Patrick M	Endorses relative to 5-year business plan or emergent work	New England
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment	New England
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule	All

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith
	Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegates	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

6.1.3 List References

N/A



Short Form Sanction Paper

7 Decisions

I:

- (a) APPROVE this paper and the investment of \$3.177M and a tolerance of +/- 10%
- (b) NOTE that Marina Perrone is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket/Program projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature  Date 3/1/2016
Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering

Short Form Sanction Paper



8 Other Appendices

8.1 Sanction Request Breakdown by Project

N/A



Spending Review Closure

Title:	FY17 Purchase Gas Meters Blanket – Rhode Island	Sanction Paper #:	USSC-16-053C
Project #:	CON0063	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	August 15, 2017
Author:	Ryan Geiger	Sponsor:	John Stavrakas, VP Gas Asset Management
Utility Service:	Gas	Project Manager:	Ryan Geiger

1 Executive Summary

This paper is presented to close CON0063. The total spend was \$2.340M. The latest sanctioned amount for this project was \$3.177M at +/- 10% (project grade).

The final spend amount is \$2.340M broken down into:

- \$2.309M Capex*
- \$0.000M Opex*
- \$0.031M Removal*

2 Project Summary

This project provides funding for the purchase and test of gas meters and associated instrumentation.



Spending Review Closure

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CON0063	Gas Meter Purchase Blanket - RI	Capex	2.309
		Opex	0.000
		Removal	0.031
		Total	2.340
Total		Capex	2.309
		Opex	0.000
		Removal	0.031
		Total	2.340

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.177
		Opex	0.000
		Removal	0.000
		Total Cost	3.177
Sanction Variance (\$M)			Total Spend
		Capex	0.868
		Opex	0.000
		Removal	(0.031)
		Total Variance	0.837



Spending Review Closure

3.2 Analysis

The above variance was the result of purchasing fewer meters than originally budgeted. In particular, there were fewer meter changes performed by Customer Meter Service (CMS) than what was budgeted for, which led to the underspend.

4 Improvements / Lessons Learned / Root Cause

The Company is working to better align Asset Management with CMS and their planned work to achieve a better forecast and a more accurate budget. Asset Management is currently working closely with Resource Planning and the Gas Meter Shop to track money being spent and to improve project forecasts.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
 - construction may cross multiple fiscal years



Spending Review Closure

- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed
N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Refer to Section 4 Improvements/Lessons Learned/Root Cause

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
	Quan, Philip	
Resource Planning	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate



Spending Review Closure

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

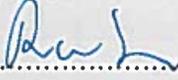
Function	Individual
Finance	Midkiff, Felicia M.
Regulatory	Humm, Robert on behalf of Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul



Spending Review Closure

7 Decisions

I approve this paper.

Signature.....  Date: 

Executive Sponsor – Ross Turrini, SVP Gas Process and Engineering and Group
Chief Engineer - Gas

*Work Orders open at time of audit, March 2017



Short Form Sanction Paper

Title:	FY17 Gas System Reinforcement Program - RI	Sanction Paper #:	USSC-16-013
Project #:	CRCC111	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	February 23, 2016
Author:	Adnan Malik / Eric Aprigliano	Sponsor:	John Stavrakas – Acting Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	William Mycroft

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRCC111 in the amount \$4.812M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$4.812M broken down into:

- \$3.598M Capex*
- \$0.000M Opex*
- \$1.214M Removal*

1.2 Project Summary

Rhode Island system growth is forecasted to experience a peak-day customer growth of 20,103 Dth over the next five (5) years, corresponding to an average annual growth rate of 1.0%. Compounded by a first-year growth of 1.4% from the 2014 forecast, similar to last year’s large growth, the current infrastructure will require system reinforcements to be constructed. For this year, new main will be used to connect areas of systems with strong pressures to those with weaker pressures, relay of small diameter mains with larger diameter mains, and a relocation of a district regulator station will be added in order to address a potential of 8,119 customers impacted if design conditions (i.e., average temperature of -3° F) were experienced during the 2016/17 heating season based on current sendout forecast. Construction of the proposed projects in this program will ensure continuous and reliable service to these customers.

2 Project Detail

2.1 Background

Each year, Long Term Planning performs an analysis on the U.S. gas distribution network to determine any reinforcement projects, and associated costs, that need to be constructed over the following five (5) years in order to support forecasted customer



Short Form Sanction Paper

growth. Reinforcement projects are designed to maintain minimum pressures throughout the distribution system under peak-hour conditions and are generally constructed as they become necessary (i.e., "just in time" reinforcement philosophy). These projects ensure that continuous service is maintained to all customers on the gas distribution network throughout the year in compliance with Federal and State Codes.

Examples of distribution system reinforcement projects include, but are not limited to, the following:

- Replacing existing undersized mains with larger diameter mains. "Leak-prone" pipe is targeted whenever practical.
- Looping or connecting system endpoints by installing new main.
- System operating pressure upratings (e.g. 10 psig to 35 psig).
- Installing new district regulators as well as replacing and/or rebuilding existing undersized district regulators.
- Transferring existing customers supplied from low-pressure mains to adjacent high-pressure mains (i.e., load shedding).

The results of the analysis are memorialized in the US Gas Distribution 5-Year Reinforcement and Reliability Plan. The Plan is issued annually so that it can be adjusted for changes to the Gas Supply send-out forecast, differences between actual and estimated load growth, reinforcement project deferrals, public works activity, main replacement program activity, Sales and Program Operations supported growth reinforcements, and updates/improvements to the Synergi computer network analysis models. The plan described herein is year one (1) of the 5 year plan covering fiscal year 2017.

It should be noted that the Synergi computer models used for the hydraulic analysis of the distribution network are validated on an annual basis. Field data from one of the coldest days of the year along with the highest distribution send-out is collected from across the network. The computer model is configured to match the system load experienced on that day and then calculated pressures are compared with field charts and SCADA data. Discrepancies are investigated to determine where the model might require updating and/or where field investigation is warranted. Conditions such as broken valves and mains filled with debris identified through the investigation process are remediated. For the 2014-15 verification analysis, there was good correlation on the Rhode Island gas system between model predicted pressures and actual recorded pressures with 89% of the verification points within acceptable tolerance. This shows that the model is reasonably accurate in predicting future problem areas. Also, this verification process helps identify potential new pressure monitoring locations in areas indicated by the model which could see pressure problems. These are areas which currently don't have pressure monitoring equipment. This helps in the future to ensure that predicted pressure problems are field verified before reinforcements are installed. Further details and results of the analysis are contained in the US Enterprise Wide 2014-15 Winter Performance Report.



Short Form Sanction Paper

Additionally, Long Term Planning uses a more in-depth analysis of customer growth to the zone/zip code level based on zone growth factors (percentages) provided by the Forecasting and Analytics group. This is allocated to the forecasted customer growth on the validated Synergi computer models. The result of this methodology is that some cities/town/zones show positive growth while others may show negative growth. By better simulating where the customer growth is expected to occur, the overall accuracy of the reinforcement projects that must be constructed in order to support each region’s average annual system growth are identified. These projects are designed to maintain minimum system design pressures during periods of peak demand, (i.e. design weather conditions), thus ensuring continuous service to all customers on the network in compliance with Federal and State Codes. The peak demand for a given territory is based on the same corporate forecast that is filed annually with the state utility commission and used to develop the gas supply portfolio. The System Reinforcement program is a critical component for enabling that gas supply to be delivered to the firm customer. Design weather conditions have been established for Rhode Island as -3°F (68 HDD).

2.2 Drivers

The 5-year gas send-out forecast for Rhode Island is as follows:

GAS SENDOUT (DT/DAY)						
Current Yr 15/16	Yr 1 16/17	Yr 2 17/18	Yr 3 18/19	Yr 4 19/20	Yr 5 20/21	Total Growth
401,179	402,824	408,552	412,546	416,886	421,283	20,103

The goal of the program is to maintain continuous service to all customers on the Rhode Island gas distribution network during periods of peak demand (i.e., design weather conditions). The results of the analysis (described above) performed on the gas distribution network for the 2016/17 winter using the current gas supply send-out forecast predicts that approximately 8,119 customers could experience pressures below minimum design and could be at risk of losing service if design conditions were to be experienced and the growth prediction is accurate. The estimated restoration cost (i.e., relight, plus claims) for this number of customers is \$8.12M, based on \$1,000/customer (See Appendix 2 for a discussion of the \$1,000/customer basis). This exceeds the cost of reinforcing the gas system to prevent this loss by approximately 68%. The projects contained in this reinforcement program have been designed to address these issues. These projects are designed for aggregate growth of all new customers; they are not for any specific customer.

2.3 Project Description

The reinforcement program includes the design, procurement, construction, testing, and completion of capital projects. The program contains various types of projects designed to cost-effectively reinforce areas of the gas distribution network that are predicted to experience pressures below minimum design levels due to forecasted



Short Form Sanction Paper

growth. A full list of the Gas Planning Reinforcement Program projects for RI is in Appendix 1. The projects, totaling \$4.812M, are organized by the following work types:

- **New Main – Four (4) Projects \$1.00M**
In most cases, new main projects are designed to bring pressures on systems above minimum design levels by connecting areas of systems with strong pressure to areas with weaker pressure. This method of reinforcement often involves installing main in streets without gas, which provides opportunities to connect new customers. A total of 3,510 LF (0.7 miles) of new main will be installed under these projects.
- **Regulator Stations – One (1) Project \$0.50M**
A regulator station may be optimally designed and located to assist in achieving pressure support of lower pressure systems, raising systems above minimum design levels. These stations are strategically placed based on minimizing new main and interconnecting two separately pressure systems without causing strain on the upstream system. This project will replace and relocate a 99 psig to LP regulator station in Newport.
- **System Upratings & Deratings – Two (2) Projects \$0.26M**
System uprating and deratings may act as load shedding projects, bringing lower pressure system support or reducing strain on higher pressure systems. By transferring customers from one system to another may benefit a system to rise above minimum design levels. One project in Newport uprates segments to 10 psig, reducing the load off the LP.
- **Relay Main – Nine (9) Projects \$2.88M**
Relay main projects are designed to bring pressures on systems above minimum design levels by replacing small diameter mains, which often cause bottlenecks in the system, with larger diameter mains. Whenever practicable, "leak-prone" pipe is targeted for replacement. A total of 8,980 LF (1.7 miles) of new plastic main will be installed under these projects. In addition, 79% of the main being replaced is "leak-prone" pipe. Two of these projects were carryover from FY16.
- **Engineering Costs for Fiscal Year 2017 Projects & Winter Performance Placeholder - \$0.16M**
These costs are for engineering and design of projects identified for FY18 construction. The Level 1 estimate was determined by Project Engineering and based on historical data. Additionally, an amount is allocated to address any issues that could arise during winter operations and be identified with winter performance.

2.4 Benefits

Reinforcement projects that ensure continuous and reliable service to customers in a cost efficient manner are identified and proposed for construction. Prospective projects are evaluated for additional system benefits and synergies with other proposed capital projects and often have the added benefit of increasing overall system reliability and improving operability of the network. In addition, many of these projects create the opportunity to be combined with public works activities or replace/abandon aging



Short Form Sanction Paper

infrastructure (e.g., "leak-prone" pipe) whenever applicable, providing a benefit to the integrity program.

Approximately 8,119 customers may experience pressures below minimum design and be at risk of losing service if design conditions were to be experienced during the 2016/17 heating season and the growth forecast is accurate. The construction of the Rhode Island reinforcement program will eliminate this possibility.

Also, current conditions on the Rhode Island gas distribution system require contingency operations in order to manage the system during periods of peak demand. These operations involve the manual adjusting of nine (9) LP district regulator set-points above the standard 10 inches water column setting and one (1) HP district regulator set-point to MAOP. The construction of the Rhode Island reinforcement program will assist in eliminating this need.

Additionally, the program will install approximately 13,485 LF of main and facilitate the abandonment of approximately 7,554 LF of existing "leak-prone" pipe on the system. This represents a replacement rate of 56% for this program.

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere.

2.6 Alternatives

Alternative 1: Do Nothing/Deferral

This option could result in potentially 8,119 customers experiencing pressures below minimum design levels and being at risk of losing service if design conditions were to be experienced during the 2016/17 heating season term under the current Gas Supply sendout forecast. The estimated restoration cost (i.e., relight, plus claims) for this number of customers is \$8.12M, based on \$1,000/customer. In addition, restrictions on sales activities would be required in constrained areas and the Company could find itself in violation of its tariff in jurisdictions with an obligation to serve.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.756M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



Short Form Sanction Paper

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
CRCC111	Gas System Reinforcement - RI	4.812
Total		4.812

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	Federal Code 49 CFR 192.623 and (2006) RI Rules & Regulations for Gas Utilities, Section D, Part 2a require minimum pressures to be maintained in the gas system. National Grid has established system minimum pressures to be maintained for all pressure levels.
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

3.5 Asset Management Risk Score

Asset Management Risk Score: 38

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability Environment Health & Safety Not Policy Driven

3.6 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
July 2017	Project Closure



Short Form Sanction Paper

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-FY21 Gas Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.000

4.1.1 If cost > approved Business Plan how will this be funded?

N/A

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CRCC111	Gas System Reinforcement - RI	+/- 10%	CapEx	-	3.598	-	-	-	-	-	3.598
			OpEx	-	-	-	-	-	-	-	
			Removal	-	1.214	-	-	-	-	1.214	
			Total	-	4.812	-	-	-	-	4.812	

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	3.598	0.000	0.000	0.000	0.000	0.000	3.598
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	1.214	0.000	0.000	0.000	0.000	0.000	1.214
Total Cost in Bus. Plan	0.000	4.812	0.000	0.000	0.000	0.000	0.000	4.812

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Short Form Sanction Paper

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanctioning Approval	02/2016
Begin Construction	04/2016
Projects in Service	11/2016
Construction Complete	03/2017
Project Closeout	07/2017

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
<i>Resource Planning</i>	Vidal, Alfredo	Endorses resources, cost estimate, schedule, and portfolio alignment.
<i>Project Management</i>	Michel, Michael	Endorses resources, cost estimate, and schedule.
<i>Gas Project Estimation</i>	Paul, Arthur	Endorses cost estimate.

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
<i>Finance</i>	Fowler, Keith
<i>Finance</i>	Horowitz, Phillip
<i>Regulatory</i>	Zschokke, Peter
<i>Jurisdictional Delegates</i>	Iseler, David G.
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Eagan, Mark J.

6.1.3 List References

1	US Enterprise 5-Year Distribution System Reinforcement & Reliability Plan
---	---

Short Form Sanction Paper



7 Decisions

I:

- (a) APPROVE this paper and the investment of \$4.812M and a tolerance of +/- 10%
- (b) NOTE that William Mycroft is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any blanket projects are not approved prior to the start of the FY18 fiscal year, the FY17 approval limits will remain in effect until such time as the FY18 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature  Date 3/15/2016

Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering



Short Form Sanction Paper

8 Other Appendices

8.1 Sanction Request Breakdown by Project

Appendix 1 – FY17 Rhode Island Reinforcement Projects

Work Type	Town	Project Description	Length	Size	Material	MAOP	Estimate	Estimate Level
Main-Relay	Barrington	Relay 1,825 LF of 6-in BS, 4-in WS 25 psig main with 12-in PE 25 psig main on the Bike Path from Brown St to 8-in PE 25 psig at Main St.	1,825	12	PL	25	\$523,277	1
Main-Relay	Bristol	Relay 1,100 LF of 10-in CI LP with 12-in PE on Wood St from Shaws to Mt Hope.	1,100	12	PL	LP	\$404,008	1
Main-Relay	Bristol	Relay 130 LF of 2-in BS LP with 100 LF of 6-in PE on Fox Hill S/ Mt Hope.	100	6	PL	LP	\$45,562	1
Main-Relay	Cranston	Relay 610 LF of 6-in CI with 8-in PE along Pontiac Ave from Hayward St to Concord Ave.	610	8	PL	LP	\$275,975	1
Main-New	East Providence	Install 1,150 LF of 8-in PE 99 psig parallel main on Wampanoag Trail from existing 8-in CS 99 psig at #400 to the N/S road crossing.	1,150	8	PL	99	\$446,431	1
Main-New	East Providence	Install 400 LF of 4-in PE 5 psig on Martin from Inlet of Dodge @ Martin (RIS-005) to Angell, transfer services to IP main, and relay 167 LF of 6-in CI with 200 LF of 4-in PE 5 psig along Angell from #12 to Dodge.	600	4	PL	5	\$151,571	1
Main-New	Lincoln	Install 775 LF of 6-in PE LP main on Reservoir Ave from #279 to Williams St.	775	6	PL	LP	\$176,554	1
Main-Relay	Lincoln	Relay 600 LF of 6-in CI LP with 12-in PE main on Woodland St from the outlet of Station C037 to W Coodland Ct.	600	12	PL	LP	\$224,308	1
System Updatings and Deratings	Newport	Cliff Ave LP Uprate to 10 psig. Relay 260 LF of 4-in CI LP main with 4-in PL 10 psig on Beach Ave from #5 to Cliff. Disconnect of Newport LP at Annandale and Merton, Annandale and Dreser, & connect to 6-in PE 10 psig main, uprating segment to 10 psig. Total of 5,135 LF, 61 services	280	6, 4	PL	10	\$261,095	1
Reg - Modify	Newport	Relocate LP Regulator Station RIS-N211 (Admiral Kalbfus @ Third) to Cypress @ Third with 2-in prefab. Relay 715 LF of 6-in WS on Third St from Cypress to Van Zandt with 12-in PL LP.	715	12	PL	LP	\$500,000	1
Main-Relay	Newport	Relay 1,845 LF of 4-in CI, 6-in PL LP with 6-in PL 99 psig on Gibbs Ave from Kay St to Catherine St.	1,845	6	PL	99	\$492,455	1
Main-New	North Providence	Install 985 LF of 8-in PE LP main on David St from RIS-129 to Alexander St, and Pearl Ave from Alexander St to #56.	985	8	PL	LP	\$230,717	1
Main-Relay	North Providence	(Carryover FY16) Relay of 1,000 ft of 6-in CI LP on Charles St from Mineral Spring to May St with 12-in PE LP main.	1,000	12	PL	LP	\$328,375	1
Main-Relay	Pawtucket	Relay 750 ft of 6-in CI LP with 12-in PE LP main on Main St from Moshassuck St to Heaton St.	750	12	PL	LP	\$361,027	1
Main-Relay	Woonsocket	(Carryover FY16) Relay 475 ft of 4-in CI LP main with 8-in PE LP main in Ballou St from Bailey St to Providence St, 635 ft of 4-in CI LP main with 8-in PE LP main in Providence St from Ballou St to Ave C, & transfer 25 LP services to 60 psig (BS) main on Providence St & Ballou St.	1,150	8	PL	LP	\$226,500	1
Engineering	Various	Engineering costs associated with FY18 projects					\$75,000	0
TBD	Various	Projects associated with Winter Performance					\$90,000	0



Short Form Sanction Paper

Appendix 2 – Outage Restoration Costs

Estimates for relighting customers and recovering from a system outage have been prepared to quantify the impact of outages related to insufficient system capacity during periods of peak demand and severe winter cold.

Actual relight costs have been captured from recent incidents to quantify company expenses related to restoring service. These were all related to outages that occurred for reasons other than insufficient system capacity and operations were conducted under benign weather conditions. It is likely that during severe winter weather, costs would increase.

Claims related to frozen buildings, burst pipes and equipment damage due to a lack of heat during severe cold weather were captured from the only incident in recent times the company experienced – e.g. the outage in Hull, Ma during the peak day of January 16th, 2004.

Relight Costs

Tiverton (2008): 900 customer outage with relight costs of \$322,839 for an average relight cost of \$358.71 per customer.

Cutchoque (2003): 1,800 customer outage with relight costs of \$2,367,401 with an average relight cost of \$1,315.22

Glen Cove (2008): 1,016 customer outage with relight costs of \$275,000 for an average relight cost of \$270.67 per customer

Westerly, RI (2011): 1,686 customer outage with relight costs of \$2,811,455 for an average relight cost of \$1,667.53 per customer

Average cost to relight for combined instances above equals \$1069 per customer

Claims

Hull (2004): 297 customers affected with claims totaling \$206,336 for an average claim of \$694.73 per customer

Combined cost of relight and claims

The combined cost of relighting customers and resolving claims averages out to \$1,764 per customer.

Recognizing the amount of variability in different incidents such as weather conditions, different types of neighborhoods, variable labor costs, economies of scale, etc., for purposes of evaluating the benefits of reinforcement projects, an average value of service restoration costs and claims of \$1,000 per customer is used.



Spending Review

Title:	FY17 System Reinforcement - RI	Sanction Paper #:	USSC-16-013C
Project #:	CRCC111	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	July 11, 2017
Author:	Adnan Malik / Eric Aprigliano	Sponsor:	John Stavrakas -Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	William Mycroft

1 Executive Summary

This paper is presented to close CRCC111. The total spend was \$4.979M. The sanctioned amount for this project was \$4.812M with a tolerance of +/- 10% (project grade).

The final spend amount is \$4.979M, broken down into:

- \$4.643M Capex*
- \$0.000M Opex*
- \$0.336M Removal*

2 Project Summary

This is the annual sanction closure of the Gas System Reinforcement program for Rhode Island. Rhode Island gas system is forecasted to experience a peak-day customer growth of 20,103 Dth over the next five (5) years, corresponding to an average annual growth rate of 1.0%. Compounded by a first-year growth of 1.4% from the 2014 forecast, the current infrastructure required system reinforcements to be constructed. For Fiscal Year 2017 projects, new mains were used to connect areas of systems with strong pressures to those with weaker pressures, small diameter mains were relayed with larger diameter mains, and a relocation of a district regulator station was added in order to address a potential of 8,119 customers impacted if design conditions (i.e., average temperature of -3° F) were experienced during the 2016-17 heating season based on current sendout forecast. Construction of these proposed projects in the program will ensure continuous and reliable service to these customers. Overall, the program was successful and no distribution system pressure issues were experienced during the 2016-17 winter season.



Spending Review

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRCC111	FY17 System Reinforcement - RI	Capex	4.643
		Opex	0.000
		Removal	0.336
		Total	4.979
Total		Capex	4.643
		Opex	0.000
		Removal	0.336
		Total	4.979

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.598
		Opex	0.000
		Removal	1.214
		Total Cost	4.812
Sanction Variance (\$M)			Total Spend
		Capex	(1.045)
		Opex	0.000
		Removal	0.878
		Total Variance	(0.167)

3.2 Analysis

Actual spend was within the approved +/- 10% tolerance level.

4 Improvements / Lessons Learned/Root Cause

Current and future programs include anticipated carry-over estimates on a project level basis, whether the costs are to complete construction and/or restoration. Updates to the Rhode Island standard estimation tool with planned annual updates based on current expenditures lead to better project estimates. Monthly actual costs reporting have ensured proper budget tracking throughout the fiscal year. Bi-weekly meetings are now conducted by Resource Planning to ensure focus on these projects, establish project schedules and milestones, timely identify and mitigate risks, and enable reporting accuracy on the progress of projects and the overall program.



Spending Review

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and/or funding projects which have not yet been closed for reasons including, but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed;
 - construction may cross multiple fiscal years;
 - the work order closing process is within the late charge waiting period; or
 - other accounting processes or final system closing activities have not yet completed.

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including, but not limited to:
- design and/or construction have not yet completed;
 - construction may cross multiple fiscal years;
 - work has completed recently and as-builts have not yet been processed into the system; or



Spending Review

- does not apply. Work order(s) are not linked to work management systems. (i.e.,: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)

(3) All lessons learned have been entered appropriately into the lesson learned database.

- Refer to Section 4 (Improvements/Lessons Learned/Root Cause).

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick Quan, Philip	Endorses relative to 5-year business plan or emergent work
<i>Project Management</i>	Fortier, Joseph	Endorses Resources, cost estimate, and schedule
<i>Resource Planning</i>	Falls, Jonathan	Endorses Resources, cost estimate, schedule, and portfolio alignment
<i>Gas Project Estimation</i>	Paul, Art	Endorses cost estimate

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
<i>Finance</i>	Midkiff, Felicia
<i>Regulatory</i>	Gurry, Renee
<i>Jurisdictional Delegate</i>	Currie, John
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Loiacono, Paul

Spending Review



7 Decisions

I approve this paper.

Signature.....*Ross Turrini*.....Date.....*7/17/2017*.....

Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering and Chief Engineer – Gas



Short Form Sanction Paper

Title:	FY 17 City/State Construction Blanket - Narragansett Electric Company	Sanction Paper #:	USSC-16-019
Project #:	CRCC306, CRCC307, CRCC308, CRCC312	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	February 10, 2016
Author:	Laeyeng Hunt	Sponsor:	Tom Bennett, Vice President of Gas System Engineering
Utility Service:	Gas	Project Manager:	Jon Falls

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Project # CRCC306, CRCC307, CRCC308, CRCC312 in the amount of **\$12.557M** and with a tolerance of **+/- 10%** for the purpose of full implementation.

This sanction amount of \$12.557M for the FY 2016/2017 program can be broken down into:

*\$11.867 M Capex
\$0.000M Opex
\$0.690M Removal
With a CIAC/Reimbursement of \$1.327M*

1.2 Project Summary

The City/State Construction (CSC) Program for the Narragansett Electric Company consists of work driven by numerous municipalities that National Grid serves, as well as various third party private entities within the Narragansett Electric Company service area.

2 Project Detail

2.1 Background

The City/State Construction (CSC) Program for the Narragansett Electric Company consists of work driven by the Rhode Island Department of Transportation (RIDOT) and the numerous municipalities that National Grid serves, as well as various third party private entities within the Narragansett Electric Company service area.



Short Form Sanction Paper

2.2 Drivers

City State Construction is a Mandated Program requiring National Grid to coordinate and work with Municipalities within our operating territory on public works projects. The primary drivers are to address existing gas infrastructure conflicts, to improve the safety and reliability of the gas distribution system in conjunction with public works projects, which have shown to have significant benefits to customers and communities. In addition, by replacing LPP in association with planned public works construction projects, the Company is able to minimize construction impacts and inconvenience to the customers and the communities.

2.3 Project Description

The estimated quantity for main replacement is 58,080 linear feet (10.0 miles for non-reimbursable work and 1.0 mile for reimbursable work).

2.4 Benefits

Approximately 90% of the CSC Main replacement for the Narragansett Electric Company Territories will contribute an estimated 52,272 linear feet (9.90 miles) of Leak Prone Pipe (LPP) to the ISR Program.

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere.

2.6 Alternatives

Alternative 1: Doing nothing is not an option because we must comply with company policy (DAM01008) and regulatory requirements (220 CMR 113.00: M.G.L. c. 164).

2.7 Investment Recovery

It is estimated that 90% of the funds are eligible for recovery through the 2017 Gas ISR program.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$2.492M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



Short Form Sanction Paper

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

The following are the Power Plant titles.

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CCCC306, CCCC307, CCCC308, CCCC312	0	Main Repl Pub Works NON-Reimb-BE Main Repl Pub Works Reimb-BE Main Encroach Parallel-BE Main Encroach Undermined-BE	12.557

3.2 Associated Projects

NA

3.3 Prior Sanctioning History

NA

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	National Grid is required to relocate its facilities within the project limits that are in direct interference of the proposed construction and installation of new infrastructure facilities.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)



Short Form Sanction Paper

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

3.6 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Sanction Closure

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY 17 -21 Gas Capital Plan - Budget file	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

4.1.1 If cost > approved Business Plan how will this be funded?

N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CIAC/Reimbursement	0.000	1.327	0.000	0.000	0.000	0.000	0.000	1.327

The CIAC was calculated based on historical percentage of capital spend.



Short Form Sanction Paper

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2016/17	2017/18	2018/19	2019/20	2020/21	2021/22			
CCCC306	Main Repl Pub Works NON-	Est Lvl (e.g. +/- 10%)	CapEx	-	11.867	-	-	-	-	-	-	11.867	
CCCC307	Reimb-BE		OpEx	-	-	-	-	-	-	-	-	-	
CCCC308	Main Repl Pub Works Reimb-		Removal	-	0.690	-	-	-	-	-	-	0.690	
CCCC312	BE		Total	-	12.557	-	-	-	-	-	-	12.557	
Total Project Sanction			CapEx	-	11.867	-	-	-	-	-	-	11.867	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.690	-	-	-	-	-	-	-	0.690
			Total	-	12.557	-	-	-	-	-	-	-	12.557

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CapEx	0.000	11.867	0.000	0.000	0.000	0.000	0.000	11.867
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.690	0.000	0.000	0.000	0.000	0.000	0.690
Total Cost in Bus. Plan	0.000	12.557	0.000	0.000	0.000	0.000	0.000	12.557

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Approval	February 2016
Construction Start Date	April 2016
Completion	March 2017
Closure Report	June 2017



Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Construction</i>	Fromm, Walter	Constructability & Schedule
<i>Construction</i>	Lundquist, Gerard	Constructability & Schedule
<i>PE&D</i>	Hunt, Laeyeng	Design, Liaison & System Reliability
<i>Investment Planning</i>	Pensabene, Patrick	Endorses relative to 5-year business plan
<i>Resource Planning</i>	Vidal, Alfredo	Endorses Resource, cost estimate, schedule and portfolio alignment
<i>Project Management</i>	Michel, Michael	Endorses Resources, cost estimate, schedule

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith
Finance	Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegates	Iseler, Dave
Procurement	Curran, Art
Control Center	Eagan, Mark

6.1.3 List References

N/A



Short Form Sanction Paper

7 Decisions

The US Sanctioning Committee at a meeting held on February 10, 2016:

(a) APPROVED this paper and the investment of \$12.557M and a tolerance of 10+/%

(b) NOTED that Jon Falls is the Project Manager and has the approved financial delegation.

(c) NOTED: In the event that any Blanket/Program projects are not approved prior to the start of the FY18 fiscal year, the FY17 approval limits will remain in effect until such time as the FY18 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature  Date 3/15/2016

Executive Sponsor – Ross Turrini, SVP Gas Process and Engineering



Short Form Sanction Paper

8 Other Appendices

NA

8.1 *Sanction Request Breakdown by Project*

NA



Spending Review Closure

Title:	FY17 City State Construction/Public Works Blanket for Narragansett Electric Company – FY17	Sanction Paper #:	USSC-16-019C
Project #:	Multiple Funding Projects – see Appendix	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	August 9, 2017
Author:	Laeyeng Hunt	Sponsor:	Annette Saxman, VP of Gas System Engineering
Utility Service:	Gas	Project Manager:	Bill Mycroft

1 Executive Summary

This paper is presented to close multiple funding projects - see Appendix. The total spend was \$9.878M. The sanctioned amount for this project was \$12.557M at +/- 10% (project grade).

The final spend amount is \$9.878M broken down into:

- \$9.203M Capex
- \$0.000M Opex
- \$0.675M Removal
- With a CIAC/Reimbursement of \$1.335M*

2 Project Summary

The City/State Construction (CSC) Program for The Narragansett Electric Company consists of work driven by numerous municipalities that National Grid serves, as well as various third party private entities within the Narragansett Electric Company service area. This program is directed at replacing infrastructure that will be compromised by third party construction.

3 Over / Under Expenditure Analysis

3.1 Summary Table



Spending Review Closure

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple - See Appendix	City State Construction/Public Works for Narragansett Electric Company	Capex	9.203
		Opex	0.000
		Removal	0.675
		Total	9.878
Total		Capex	9.203
		Opex	0.000
		Removal	0.675
		Total	9.878

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	11.867
		Opex	0.000
		Removal	0.690
		Total Cost	12.557
Sanction Variance (\$M)			Total Spend
		Capex	2.664
		Opex	0.000
		Removal	0.015
		Total Variance	2.679

3.2 Analysis

The major reason for the total cost variance for the CSC Program was the decrease in spend by the various Narragansett Electric municipalities that impacted the Company's facilities. The decreased municipal spend had a corresponding effect on the CSC Program.

4 Improvements / Lessons Learned / Root Cause

The CSC Program is driven predominantly by the various Narragansett Electric municipalities and Rhode Island Department of transportation (RIDOT) work on the Company's facilities. Although these are dynamic plans which are subject to change, increased tracking and communication of the various municipal plans may provide enhanced insight on the volume and scope of upcoming municipal projects. Continuing



Spending Review Closure

to improve, enhance, and update estimating tools with latest data will provide greater oversight over cost.

A new monthly process has been put in place by Resource Planning and others to ensure budget adherence and a balanced capital portfolio via the Zero Variance (ZVM) and Portfolio Calibration (PCM) Meetings. During these meetings, Resource Planning applies a holistic view of the capital portfolio, identifies and carefully evaluates any changes to forecasts, and makes recommendations to ensure the capital portfolio remains on budget.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
- Program/Blanket projects may contain work orders and/or funding projects which have not yet been closed for reasons including but not limited to:
 - the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed;
 - construction may cross multiple fiscal years;
 - the work order closing process is within the late charge waiting period; and/or
 - other accounting processes or final system closing activities have not yet completed.



Spending Review Closure

- (2) All as-builts have been completed
 - Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:
 - design and/or construction have not yet completed;
 - construction may cross multiple fiscal years; and/or
 - work has completed recently and as-builts have not yet been processed into the system.
- (3) All lessons learned have been entered appropriately into the lesson learned database
 - Refer to Section 4, Improvements/Lessons Learned/Root Cause

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planning	Pensabene, Patrick Quan, Philip	Endorses relative 5-year Business Plan
Resource Planning	Falls, Jonathan	Endorses Resources, Cost Estimate, Schedule and Portfolio Alignment
Project Management	Fortier, Joseph	Endorses Resources, Cost Estimate,
Gas Project Estimation	Paul, Art	Endorses Cost Estimates

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

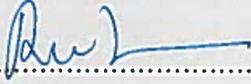
Function	Individual
Finance	Midkiff, Felicia
Regulatory	Gurry, Renee
Jurisdictional Delegates	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul



Spending Review Closure

7 Decisions

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on August 9, 2017.

Signature..........Date 
Ross Turrini
SVP Gas Process and Engineering and Chief Gas Engineer



Spending Review Closure

8 Appendix A

Sanction Paper Number	Original Approved Amount	Re-sanction Approved Amount	FP Proj No	FP Proj Description	ACTUAL			
					CAPEX	Removal	Opex	Total
USSC-16-019	\$12,557,000	\$0	C041683	FAP-Central Bridge in Barrington	\$1,625		\$0	\$1,625
			C051525	Atwells Ave bridge	(\$4,876)		\$0	(\$4,876)
			C051526	RIDOT: Apponaug Curculator	\$250,267	\$196,798	\$0	\$447,065
			CRCC306	Main Repl Pub work non-reimb-RI	\$6,961,759	\$305,479	(\$549)	\$7,266,689
			CRCC307	Main Repl Pub work reimb-RI	\$917,154	\$102,762	\$0	\$1,019,916
			CRCC308	Gas Main Encroach Parallel-RI	\$962,168	\$66,393	\$0	\$1,028,561
			CRCC312	Gas Main Encroach Undemined-RI	\$114,803	\$3,869	\$0	\$118,672
			CRFS201	Main Exposr-RI	\$0		\$0	\$0
USSC-16-019 Total					\$9,202,900	\$675,301	(\$549)	\$9,877,652

Funding Project Information			
Description	RI-03891 (MWLY0021)	Funding Proj	CRRC301
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	6
Budget	CRRC301	Status	open
Department	43705360G - Corrosion Co	F. P. Type	P_Gas Distribution Construction RI
FP ID	326095575		
Long Description	Raise or replace test box		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	9 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	DIACOM	Close Date	
Date Suspended		Date Initiated	11/8/2012

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record 1 of 1

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Funding Project Information
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Title

Funding Project

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Class Codes

Budget Plant Class	Gas Distribution PAM
Send to SE	
Miscellaneous Billing	
Misc Billing Status	
Required	
Force Billing Flag	
RDV Allocation Eligible	
Sanctioning Data	
DOA Amount	
Lower Tolerance	.90
Strategy Type Name	
Upper Tolerance	1.10

Indicates Display Only - (d ▼)

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record of 1

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Funding Project Information
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New Approval Type

Funding Project **Revision**

Approval Type **Amount**

Status **Sent By** **Date Sent** **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Bennett, Thomas E"/>	<input checked="" type="checkbox"/>	5/12/2016	\$1,000,000

Budget Version

Rev

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Bennett, Thomas E"/>	<input checked="" type="checkbox"/>	5/12/2016	\$1,000,000

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Record of 1

Funding Project Information			
Description	Manchester TS Pipe Replacement	Funding Proj	C072646
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	3
Budget	C072646	Status	open
Department	43605360G - Gas Trans Er	FP ID	547089299
		F. P. Type	P_Gas Transmission Construction RI
Long Description	Replace approximately 18ft of 12inch steel, operating at 750#. The pipe to be replaced is located at the Manchester Take Station, at 2 Allens Ave. Providence RI		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes	The pipe to be replaced is located between the Spectra Metering building and National Grid Metering and Regulation building. The project will replace from the flange of the Spectra outlet to the flange of the National Grid Inlet. Reduce SMYS		
Reason		Approval Group	<none>
Est Start Date	4/1/2016	Late Charge Wait	0 Months
Est Complete	3/31/2017	In Service Date	
Est In Service	3/31/2017	Completion Date	
Est Annual Rev	\$0.00	First CPR Month	
Initiated By	Altbacker, Stephen J - acti	Close Date	
Date Suspended		Date Initiated	4/1/2016

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Related FPs

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

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Record 1 of 1 < > >>

Funding Project Information

Title:
Funding Project:

Class Codes

Budget Plant Class	<input type="text"/>
Send to SE	<input type="text"/>
Miscellaneous Billing	
Misc Billing Status	<input type="text"/>
Required	
Force Billing Flag	<input type="text"/>
RDV Allocation Eligible	<input type="text"/>
Sanctioning Data	
DOA Amount	<input type="text"/>
Lower Tolerance	<input type="text"/>
Strategy Type Name	<input type="text"/>
Upper Tolerance	<input type="text"/>

Indicates Display Only - (d)

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Funding Project Information
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New Approval Type

Funding Project **Revision**

Approval Type **Amount**

Status **Sent By** **Date Sent** **Date Appr**

	Approver	Required	Date Approved	Authority Limit
SAP Default Approver	<input type="text" value="Kern, Michael D"/>	<input checked="" type="checkbox"/>	5/3/2016	\$1,000,000

Budget Version

Rev

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Funding Project Information			
Description	Providence River Crossing, Signs	Funding Proj	C076968
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	3
Budget	C076968	Status	open
		FP ID	586008388
Department	43605360G - Gas Trans Er	F. P. Type	P_Gas Distribution Construction RI
Long Description	Complete design, procure, and construction of permanent warning signs on both the East and West bank of the Providence River. Where Gas Mains Cross Under River.		
Major Location	Providence - Gas Distributi	Asset Location	RIG1000 - Providence - 0E
Asset Loc Det	RIG1000 - Providence - 0601 - Gas Distribution Specific		
Notes			
Reason		Approval Group	<none>
Est Start Date	11/22/2016	Late Charge Wait	0 Months
Est Complete	3/31/2017	In Service Date	
Est In Service	3/31/2017	Completion Date	
Est Annual Rev	\$0.00	First CPR Month	
Initiated By	Altbacker, Stephen J - acti	Close Date	
Date Suspended		Date Initiated	11/22/2016

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Funding Project Information
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Title

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Related FPs

Class Codes

Budget Plant Class	
Send to SE	
Miscellaneous Billing	
Misc Billing Status	
Required	
Force Billing Flag	
RDV Allocation Eligible	
Sanctioning Data	
DOA Amount	
Lower Tolerance	
Strategy Type Name	
Upper Tolerance	

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Funding Project Information
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New Approval Type

Funding Project **Revision**

Approval Type **Amount**

Status **Sent By** **Date Sent** **Date Appr**

	Approver	Required	Date Approved	Authority Limit
SAP Default Approve	<input type="text" value="Kern, Michael D"/>	<input checked="" type="checkbox"/>	<input type="text" value="12/12/2016"/>	<input type="text" value="\$1,000,000"/>

Budget Version

Rev

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Record of 1

Short Form Sanction Paper



Title:	FY17 Proactive Main Replacement Program – Rhode Island	Sanction Paper #:	USSC-16-118
Project #:	CRCC203, CRCC207, CRCC208	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 21, 2016
Author:	Dana Wolkiewicz	Sponsor:	John Stavrakas – Acting VP – Gas Systems Engineering
Utility Service:	Gas	Project Manager:	Bill Mycroft

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Projects CRCC203, CRCC207, and CRCC208 in the amount of \$49.632M with a tolerance of +/-10% for the purpose of full implementation.

This sanction amount of \$49.632M is broken down into:

- \$48.957M Capex
- \$ 0.000M Opex
- \$ 0.675M Removal

1.2 Project Summary

This program will fund the replacement of Rhode Island’s inventory of Leak Prone Pipe (LPP), that is non-cathodically protected steel, whether bare or coated (collectively termed “unprotected steel”), as well as cast or wrought iron.

Short Form Sanction Paper



2 Project Detail

2.1 *Background.*

The 2015 inventory of LPP is approximately 1,247 miles, which represents approximately 38.7% of the distribution system in Rhode Island. As demonstrated in Appendix 1- Rhode Island Leak Rate Graph, the 2015 leak rate for all distribution piping is 0.22 leaks per mile, reduced from 0.85 leaks per mile in 2009. The 2015 leak rate for LPP is 0.57 leaks per mile, reduced from the 1.40 leaks per mile in 2009.

2.2 *Drivers*

The goal of this program is to reduce the risk associated with leak prone pipe in Rhode Island's distribution system. The replacement of LPP and associated services is also supported by the Company's Distribution Integrity Management Plan (DIMP), which specifies that the Company implement measures to: know its system; understand the threats to its distribution piping system; and evaluate risks and prepare replacement programs to help mitigate the risks to its leak prone mains and services inventory.

2.3 *Project Description*

Approval is being requested for the necessary funding to replace approximately 54 miles of LPP via the Rhode Island Proactive Main Replacement Program. Gas Engineering has identified individual main segments for replacement based upon an analysis that considers pipe material, leak repair history, surrounding structures, consequences and field conditions using the Company procedure ENG04030. Opportunities to take advantage of coordination with municipal projects and other National Grid programs and projects are also considered.

2.4 *Benefits*

The benefits of performing this work include;

- Reducing the risk and potential for incidents associated with leak prone pipe
- Improved community and government relations
- Reduced greenhouse gas emissions

Short Form Sanction Paper



2.5 Business & Customer Issue

This program improves the safety and reliability of Rhode Island’s gas distribution system, thus increasing reliable gas service to customers and reducing both existing and potential future gas leaks.

2.6 Alternatives

Alternative 1: Reduce LPP replacement

Reduce this program to a lower rate of replacement. This option would replace only the quantity of main required to hold leak rates to present levels. This is misaligned with the proposed Gas ISR plan presented to the Rhode Island Division of Public Utilities and Carriers and Commission and places the company at financial and regulatory risk.

Alternative 2: Do Nothing

This option will increase the leak rate at of our LPP and increase safety risk to our customers and public

2.7 Investment Recovery

Investment recovery will be through the FY2017 Gas Infrastructure Safety and Reliability Plan.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$10.281M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next ISR plan and/or the timing of the next filing in which the project is included in rate base

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project details are attached in section 8.1.

	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC203, CRCC207, CRCC208		Various	49.632
		Total	49.632

Short Form Sanction Paper



3.2 Associated Projects:

N/A

3.3 Prior Sanctioning History:

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory	The program is in accordance with the Company's DIM Plan (as specified by US DOT, 49 CFR Part 192, Subpart P, entitled; "Gas Distribution Pipeline Integrity Management Plan")
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 44

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability Environment Health & Safety Not Policy Driven

3.6 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Sanction Paper Closure

Short Form Sanction Paper



4 Financial

4.1 Business Plan

The budget for this program was estimated based on historical cost of replacements & remediation.

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-FY21 Gas Capital Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

4.1.1 If cost > approved Business Plan how will this be funded?

N/A

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+			
					2016/17	2017/18	2018/19	2019/20	2020/21	2021/2022			
CRCC203, CRCC207, CRCC208	Various	+/- 10%	CapEx	-	48.957	-	-	-	-	-	-	48.957	
			OpEx	-	0.000	-	-	-	-	-	-	0.000	
			Removal	-	0.675	-	-	-	-	-	-	-	0.675
			Total	-	49.632	-	-	-	-	-	-	-	49.632

Short Form Sanction Paper



4.4 Project Budget Summary Table

Project Costs per Business Plan

SM	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/2022	
CapEx	0.000	48.957	0.000	0.000	0.000	0.000	0.000	48.957
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.675	0.000	0.000	0.000	0.000	0.000	0.675
Total Cost in Bus. Plan	0.000	49.632	0.000	0.000	0.000	0.000	0.000	49.632

Variance (Business Plan-Project Estimate)

SM	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/2022	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Identify and Prioritize FY17 Rhode Island LPP replacement candidates	August 2015
Complete detailed design and cost estimates	January 2016
Contractor Bids and Material Procurement	February 2016
Project Sanction Approval	March 2016
Start Applying for Permits	March 2016
Engage Contractors and In-House Resources	March 2016
Construction Start	April 2016
Construction Complete	March 2017
Project Closure Report	June 2017

Short Form Sanction Paper



6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith; Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

6.1.3 List References:

N/A

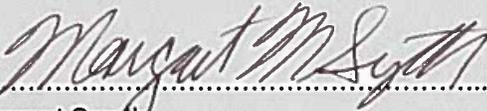
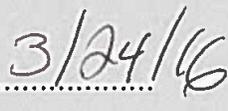
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7 Decisions

The Senior Executive Sanctioning committee (SESC) at a meeting held on March 21, 2016:

- (a) APPROVED this paper and the investment of \$49.632M and a tolerance of +/- 10%
- (b) NOTED that Bill Mycroft has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket projects are approved by USSC and/or other appropriate authority for approval.

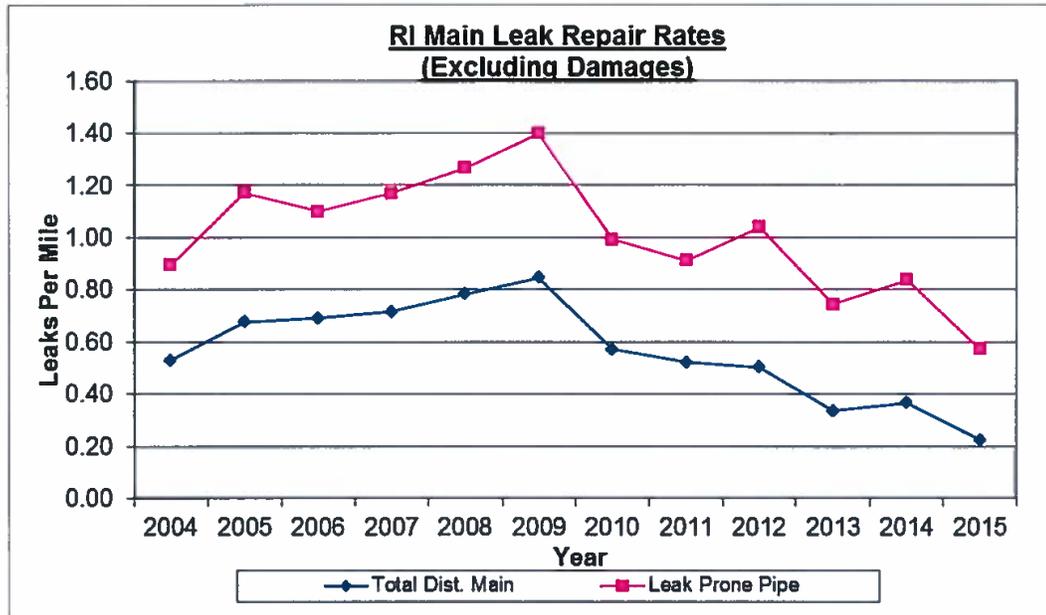
Signature..........Date.....
Margaret Smyth
US Chief Financial Officer
Chair, Senior Executive Sanctioning Committee

Short Form Sanction Paper



8.0 Other Appendices

Appendix 1: Rhode Island Leak Repair Graph



Short Form Sanction Paper



8.1 Sanction Request Breakdown by Project

Division	Town	Main wo#	Service wo#	Project Title	Program	Abandonment Mileage	Installation Mileage	Services
Providence	Barrington	90000142785	90000142788	2-8 Centennial Ave, BRG	CRCC203	0.06	0.06	2
Providence	Barrington	90000155064	90000155065	5 George Finnerly Rd, BRG	CRCC203	0.04	0.04	1
Providence	Barrington	90000163247	90000163248	Beach Rd, BRG	CRCC203	0.05	0.05	1
Providence	Barrington	90000163253	90000163254	Briarfield Rd, BRG	CRCC203	0.28	0.28	19
Providence	Barrington	90000163255	90000163257	Chapman Ln, BRG	CRCC203	0.32	0.32	13
Providence	Barrington	90000163258	90000163259	Eton Rd, BRG	CRCC203	0.35	0.36	21
Providence	Barrington	90000163260	90000163261	Lee Ann Dr, BRG	CRCC203	0.27	0.27	11
Providence	Barrington	90000163263	90000163264	Maudsley Av, BRG	CRCC203	0.11	0.11	9
Providence	Barrington	90000163265	90000163266	Melrose Av, BRG	CRCC203	0.10	0.10	3
Providence	Barrington	90000163267	90000163268	N Lake Dr, BRG	CRCC203	0.25	0.25	11
Providence	Barrington	90000163270	90000163271	Pheasant Ln, BRG	CRCC203	0.16	0.16	2
Providence	Barrington	90000163272	90000163273	Townsend St, BRG	CRCC203	0.10	0.10	12
Providence	Barrington	90000163274	90000163275	Waseca Av, BRG	CRCC203	0.27	0.27	23
Providence	Barrington	90000163277	90000163278	West Av, BRG	CRCC203	0.18	0.18	8
Providence	Bristol	90000138860	90000138861	60-84 Washington St, BST	CRCC203	0.19	0.17	10
Cumberland	Central Falls	90000142761	90000142763	28-161 Lincoln Ave, CFL	CRCC207	0.55	0.55	78
Providence	Cranston	90000142828	90000142830	681-818 Dyer Ave, CRA	CRCC207	0.85	0.54	51
Providence	Cranston	90000146585	90000146586	5-104 Woodlawn Dr, CRA	CRCC203	0.42	0.42	26
Providence	Cranston	90000155085	90000155086	134-208 Angell Ave, CRA	CRCC203	0.35	0.35	20
Providence	Cranston	90000155088	90000155090	160-308 Budlong St, CRA	CRCC203	0.57	0.60	39
Providence	Cranston	90000155095	90000155098	12-120 Preston Dr, CRA	CRCC207	0.59	0.59	58
Providence	Cranston	90000155100	90000155101	125-194 Robson St, CRA	CRCC207	0.21	0.21	14
Providence	Cranston	90000155357	90000155358	21-70 Palmer Ave, CRA	CRCC207	0.14	0.00	9
Providence	Cranston	90000160105	90000160106	10-42 Calvalry St, CRA	CRCC207	0.24	0.24	23
Providence	Cranston	90000161146	90000161147	Enterprise Av, CRA	CRCC207	0.05	0.05	5
Providence	Cranston	90000161149	90000161150	Goeckel St, CRA	CRCC207	0.08	0.08	8
Providence	Cranston	90000161154	90000161155	Hyde St, CRA	CRCC203	0.16	0.16	14
Cumberland	Cumberland	90000142844	90000142846	170-250 Williams St , CLD	CRCC207	0.34	0.34	42
Cumberland	Cumberland	90000165225	90000165226	Mount Pleasant View Av, CLD	CRCC203	0.15	0.15	8
Providence	East Greenwich	90000146654	90000146656	17-55 Sixth st, EGW	CRCC203	0.43	0.43	17
Providence	East Providence	90000139529	90000139531	161-251 Juniper Ave, EPV	CRCC207	0.44	0.14	47
Providence	East Providence	90000146532	90000146538	103-118 Legion Way , EPV	CRCC203	0.41	0.41	31
Providence	East Providence	90000146540	9000014641	5-21 Pickett Rd, EPV	CRCC203	0.36	0.36	25
Providence	East Providence	90000155066	90000155067	5-43 Arcadia Ave, EPV	CRCC203	0.36	0.36	16
Providence	East Providence	90000155068	90000155069	3-18 Breeze Way , EPV	CRCC207	0.08	0.08	5
Providence	East Providence	90000155073	90000155074	35-110 Merritt Rd, EPV	CRCC203	0.18	0.18	15
Providence	East Providence	90000155075	90000155076	9-53 Peck, EPV	CRCC203	0.20	0.20	18
Providence	East Providence	90000155080	90000155082	177-323 Warren Ave , EPV	CRCC207	0.87	0.89	68
Providence	East Providence	90000163286	9.00002E+11	Brookhaven Dr, EPV	CRCC203	1.73	1.63	156
Providence	East Providence	90000163288	90000163289	Custer St, EPV	CRCC203	0.52	0.52	38
Providence	Johnston	90000142764	90000142766	1294 Atwood Ave, JOH	CRCC203	0.02	0.02	0

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Providence	Johnston	90000142770	90000142772	5-63 John St JOH	CRCC207	0.72	0.51	50
Cumberland	Lincoln	90000142709	90000142710	1431-1530 Smithfield Ave, LNC	CRCC207	0.38	0.38	24
Providence	Middletown	90000118388	90000118389	E Main Rd, MDT	CRCC207	0.36	0.35	3
Providence	Middletown	90000155184	90000155185	3-306 Boulevard, MDT	CRCC207	1.68	1.02	93
Providence	Middletown	90000155968	90000155969	Leal Tr, MDT	CRCC207	0.16	0.07	6
Providence	Narragansett	90000160357	90000160358	Palm Beach Av, NGT	CRCC203	2.62	2.62	140
Providence	Newport	90000138151	90000138153	5-36 Poplar St, NPR	CRCC207	0.15	0.15	17
Providence	Newport	90000155186	9.00002E+11	1-33 Bedlow Ave, NPR	CRCC203	0.35	0.33	13
Providence	Newport	90000155189	90000155190	34-154 Gibbs St, NPR	CRCC207	0.31	0.31	50
Providence	Newport	90000155194	90000155195	2-52 Whitwell Ave, NPR	CRCC203	0.33	0.35	25
Providence	Newport	90000163282	90000163283	Burnside Av, NPR	CRCC207	0.18	0.18	27
Providence	Newport	90000165245	90000165246	Harrison Av, NPR	CRCC207	1.17	1.13	31
Providence	North Kingstown	90000163325	90000163326	Arrow Ln, NKS	CRCC203	0.35	0.35	14
Providence	North Kingstown	90000163329	90000163330	Edmond Dr, NKS	CRCC203	0.55	0.55	35
Providence	North Kingstown	90000163331	90000163332	Jerry Ln, NKS	CRCC203	0.44	0.44	20
Providence	North Kingstown	90000163333	90000163334	Lincoln St, NKS	CRCC203	2.16	2.16	198
Providence	North Providence	90000142696	90000142697	2031-2170 Mineral Spring Ave, NPV	CRCC207	0.53	0.73	39
Cumberland	North Providence	90000143034	90000143035	9-53 Towanda Dr, NPV	CRCC207	0.49	0.37	39
Providence	North Providence	90000146500	90000146501	13-27 Redwood Dr, NPV	CRCC203	0.22	0.22	15
Cumberland	North Providence	90000155200	90000155201	184-270 Woonasquatucket Ave, NPV	CRCC203	0.26	0.26	5
Cumberland	North Smithfield	90000155202	90000155203	8-110 Homestead Ave, NSF	CRCC207	0.35	0.35	14
Cumberland	Pawtucket	90000146660	90000146662	255-274 Taft St, PAW	CRCC203	0.15	0.05	13
Cumberland	Pawtucket	90000155205	90000155206	695-749 East St, PAW	CRCC207	0.36	0.26	13
Cumberland	Pawtucket	90000155207	90000155208	35-122 Fountain St, PAW	CRCC207	0.32	0.34	17
Cumberland	Pawtucket	90000155393	90000155394	4-72 Mowry St, PAW	CRCC207	0.23	0.23	18
Providence	Providence	90000142462	90000142463	141-223 Ocean St- PVD	CRCC207	0.11	0.11	13
Providence	Providence	90000142468	XXXXXXXXXXXX	130-288 Hamilton St, PVD	CRCC207	0.00	0.62	0
Providence	Providence	90000142516	90000142518	102-268 River Av, PVD	CRCC207	0.57	0.57	86
Providence	Providence	90000142525	90000142528	50-81 Roger Williams Ct- PVD	CRCC207	0.08	0.09	4
Providence	Providence	90000142544	90000142545	174-387 Wickenden St, PVD	CRCC207	0.46	0.13	52
Providence	Providence	90000142594	90000142595	24-112 Holden St- PVD	CRCC207	0.94	0.41	37
Providence	Providence	90000142688	90000142690	80-91 Friendship st- PVD	CRCC207	0.33	0.31	5
Providence	Providence	90000143086	90000143087	556-652 Public St- PVD	CRCC207	0.26	0.26	32
Providence	Providence	90000146496	90000146497	1-5 Lynch St, PVD	CRCC203	0.04	0.04	2
Providence	Providence	90000152448	90000152449	4-158 Elton St, PVD	CRCC207	2.00	2.04	160
Providence	Providence	90000155212	90000155213	14-57 Armstrong Ave, PVD	CRCC207	0.61	0.61	37
Providence	Providence	90000155214	90000155215	12-51 Bassett St, PVD	CRCC207	0.59	0.41	19
Providence	Providence	90000155218	90000155219	1-14 Brighton St, PVD	CRCC207	0.06	0.00	11
Providence	Providence	90000155225	90000155226	1604-1725 Chalkstone Ave, PVD	CRCC207	0.62	0.35	28
Providence	Providence	90000155228	90000155229	610 Cole Rd, PVD	CRCC203	0.21	0.21	6
Providence	Providence	90000155233	90000155234	1039-1103 Elmwood Ave, PVD	CRCC207	0.73	0.73	63
Providence	Providence	90000155235	90000155236	11-48 Firglade Ave, PVD	CRCC207	0.41	0.41	32
Providence	Providence	90000155238	90000155239	368-440 Friendship St, PVD	CRCC207	0.40	0.39	27
Providence	Providence	90000155245	90000155246	11-35 Herbert st, PVD	CRCC207	0.08	0.08	5
Providence	Providence	90000155247	90000155248	99-147 Ives St, PVD	CRCC207	0.45	0.45	74
Providence	Providence	90000155256	90000155257	96-240 Regent Ave, PVD	CRCC207	0.72	0.55	80
Providence	Providence	90000155269	90000155270	38-53 Transit St, PVD	CRCC207	0.07	0.07	3

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Providence	Providence	90000155272	90000155274	1488-1718 Westminster St, PVD	CRCC207	0.24	0.24	18
Providence	Providence	90000155276	90000155277	10-105 Weybosset St, PVD	CRCC207	0.46	0.35	17
Providence	Providence	90000163907	90000163908	Plainfield St, PVD	CRCC207	0.15	0.15	9
Providence	Providence	90000163913	90000163914	Sutton St, PVD	CRCC207	0.15	0.15	26
Providence	Smithfield	90000155307	90000155308	3-19 Maple Ave, SMF	CRCC207	0.19	0.13	8
Providence	Warren	90000161025	90000161026	Central St, WAN	CRCC207	0.08	0.08	6
Providence	Warwick	90000119984	90000119985	11 Cypress St, WWK	CRCC203	0.02	0.02	3
Providence	Warwick	90000142529	90000142531	688-750 Commonwealth Ave, WWK	CRCC203	0.16	0.16	7
Providence	Warwick	90000142582	90000142588	79-195 Manolla Ave, WWK	CRCC203	0.62	0.62	53
Providence	Warwick	90000146436	90000146437	943-1099 Main Ave, WWK	CRCC203	0.28	0.40	16
Providence	Warwick	90000150285	90000150286	165- 248 Vineyard Rd, WWK	CRCC203	0.44	0.44	17
Providence	Warwick	90000150287	90000150288	311-332 Vineyard Rd, WWK	CRCC203	0.14	0.14	5
Providence	Warwick	90000150290	90000150291	18-111 Vaughn Ave, WWK	CRCC203	0.21	0.21	17
Providence	Warwick	90000150295	90000150296	9-60 Creston WA, WWK	CRCC203	0.31	0.31	10
Providence	Warwick	90000150297	90000150298	3-47 Foxcroft Ave, WWK	CRCC203	0.69	0.69	46
Providence	Warwick	90000150315	90000150318	112-178 Manning St, WWK	CRCC203	0.55	0.55	51
Providence	Warwick	90000150319	90000150320	1-47 Marquette Dr, WWK	CRCC203	0.22	0.22	12
Providence	Warwick	90000155579	90000155580	46-92 Ardway Ave, WWK	CRCC203	0.06	0.06	0
Providence	Warwick	90000155583	90000155584	750-811 Church Ave, WWK	CRCC203	0.36	0.36	26
Providence	Warwick	90000155586	90000155587	36-99 Colorado Ave, WWK	CRCC203	0.23	0.23	6
Providence	Warwick	90000155588	90000155589	330-347 Columbia Ave, WWK	CRCC203	0.09	0.09	5
Providence	Warwick	90000155590	90000155591	33-97 Edison St, WWK	CRCC203	0.36	0.36	27
Providence	Warwick	90000155598	90000155599	119-277 Hoxsie Ave, WWK	CRCC203	0.46	0.46	23
Providence	Warwick	90000155602	90000155605	205-413 Knight St, WWK	CRCC203	0.57	0.57	21
Providence	Warwick	90000155608	90000155609	2-58 Missouri Dr, WWK	CRCC203	0.54	0.54	29
Providence	Warwick	90000155610	90000155611	16-175 Miantonomo Dr, WWK	CRCC203	1.26	1.04	56
Providence	Warwick	90000155612	90000155613	51-271 Palace Ave, WWK	CRCC203	0.42	0.42	29
Providence	Warwick	90000155614	90000155615	144-271 Richmond Dr, WWK	CRCC203	0.68	0.68	53
Providence	Warwick	90000155616	90000155617	140-325 Red Chimney Dr, WWK	CRCC203	1.11	1.11	63
Providence	Warwick	90000155618	90000155619	7-63 Relph St, WWK	CRCC203	0.34	0.34	20
Providence	Warwick	90000155620	90000155621	251-432 Spring Green Rd, WWK	CRCC203	0.65	0.65	31
Providence	Warwick	90000155622	90000155623	29-140 Wayne St, WWK	CRCC203	0.61	0.61	47
Providence	Warwick	90000155654	90000155666	2353 - 2525 W Shore Rd, WWK	CRCC203	0.77	0.77	33
Providence	Warwick	90000155655	90000155656	36-106 Wyoming Ave, WWK	CRCC203	0.46	0.46	33
Providence	Warwick	90000155657	90000155658	5-142 Yucatan Dr, WWK	CRCC203	0.97	0.97	65
Providence	Warwick	90000160360	90000160361	East Av, WWK	CRCC203	1.46	1.46	93
Providence	Warwick	90000163284	90000163285	Lucas Rd, WWK	CRCC203	0.39	0.39	38
Providence	West Warwick	90000155342	90000155343	11-62 Archambault Ave, WWW	CRCC203	0.25	0.25	13
Providence	West Warwick	90000163339	90000163340	Centre St, WWW	CRCC203	0.08	0.08	3
Providence	West Warwick	90000163342	90000163344	Tampa St, WWW	CRCC203	0.15	0.15	8
Providence	Westerly	90000145782	90000145783	269-315 High St, WLY	CRCC208	0.43	0.43	9
Providence	Westerly	90000146446	90000146447	2-66 Margin St, WLY	CRCC203	0.57	0.57	54
Providence	Westerly	90000155332	90000155333	50-117 East Ave, WLY	CRCC203	1.44	1.44	46
Cumberland	Woonsocket	90000142417	90000142419	89-203 Roberta Ave, WSO	CRCC207	0.30	0.16	13
Cumberland	Woonsocket	90000155327	90000155329	1112-1347 Logee St, WSO	CRCC203	0.25	0.25	14
Cumberland	Woonsocket	90000163279	90000163281	Newland Av, WSO	CRCC207	0.60	0.60	45

Spending Review



Title:	FY17 Proactive Main Replacement Program – Rhode Island	Sanction Paper #:	USSC-16-118C
Project #:	Multiple Funding Projects - see Appendix	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	7/24/2017
Author:	Dana Wolkiewicz	Sponsor:	John Stavrakas – VP Gas Asset Management
Utility Service:	Gas	Project Manager:	Bill Mycroft

1 Executive Summary

This paper is presented to close multiple funding projects - see Appendix. The total spend was \$49.223M. The sanctioned amount for this project was \$49.632M at +/- 10% (project grade).

The final spend amount is \$49.223M broken down into:
\$47.176M Capex
\$ 0.001M Opex
\$ 2.046M Removal

2 Project Summary

This program will fund the replacement of Rhode Island's inventory of Leak Prone Pipe (LPP), that is non-cathodically protected steel, whether bare or coated (collectively termed "unprotected steel"), as well as cast or wrought iron.



Spending Review

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple	LPP Main Replacement (Proactive) Program	Capex	47.176
		Opex	0.001
		Removal	2.046
		Total	49.223
Total		Capex	47.176
		Opex	0.001
		Removal	2.046
		Total	49.223

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	48.957
		Opex	0.000
		Removal	0.675
		Total Cost	49.632
Sanction Variance (\$M)			Total Spend
		Capex	1.781
		Opex	(0.001)
		Removal	(1.371)
		Total Variance	(0.409)

3.2 Analysis

The 1% budget variance is due to completing 0.6 fewer miles than planned—the original budget was intended for 49 miles. At the fiscal year close, 48.4 miles had been completed. The sanction variance is within 10% of the budget, which is within tolerance.



Spending Review

4 Improvements / Lessons Learned/Root Cause

Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings instituted in FY17 will ensure that sanctioned spending levels are not exceeded without executive approval.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
- Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
 - the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period
 - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

Spending Review



- (2) All lessons learned have been entered appropriately into the lesson learned database
- Refer to Section 4 Improvements/ Lessons Learned/ Root Cause

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M. Quan, Philip	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

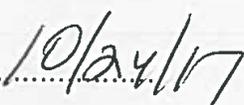
Function	Individual
Finance	Midkiff, Felicia
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

Spending Review



7 Decisions

The Senior Executive Sanctioning committee (SESC) approved this paper at a SESC meeting held on 7/24/2017

Signature..........Date.....
Margaret Smyth
US Chief Financial Officer
Chair, Senior Executive Sanctioning Committee

Spending Review



8 Appendix
Funding Project List

FP Proj No	FP Proj Description	CAPEX	Removal	Opex	Total
C077295	Lining Project - Buckly St	\$22,964	\$0	\$0	\$22,964
CON0034	RI-Gas-Main Repl-Age-RI Blnkt	\$1,141,359	\$36,077	\$0	\$1,177,436
CON0040	RI-Gas-Repl Serv Install-RI Blanket	\$19,153	\$3,648	\$0	\$22,801
CRCC203	Bare Steel Main Replace-RI	\$22,368,341	\$1,169,265	\$0	\$23,537,606
CRCC205	CI Main Replace >=16" Prog.-RI	\$9,740	\$0	\$0	\$9,740
CRCC206	CI Main Replace 10" 12" 14"-RI	\$1,596	\$0	\$0	\$1,596
CRCC207	CI Main Replace < 10"-RI	\$23,533,864	\$836,620	\$1,134	\$24,371,618
CRCC208	Plastic Main Replacement-RI	\$79,106	\$0	\$0	\$79,106
	TOTAL:	\$47,176,123	\$2,045,610	\$1,134	\$49,222,867



Short Form Sanction Paper

Title:	FY17 Service Replacement – Reactive Blanket – Rhode Island	Sanction Paper #:	USSC-16-089
Project #:	Various Projects	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 9, 2016
Author:	Fred Amaral	Sponsor:	Neil Proudman – VP Gas Operations, NE
Utility Service:	Gas	Project Manager:	Dan Sancomb

1 Executive Summary

1.1 Sanctioning Summary

This paper requests the sanction of CRFS210, CRFN210, CRFN309, CRFS309, CRFN310, CRFS310, CRFN219, and CRFS219 in the amount of \$8.250M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$8.250M broken down into:

- \$6.903M Capex*
- \$0.000M Opex*
- \$1.347M Removal*

1.2 Project Summary

This program funds the Service Replacement – Reactive Program for Narragansett Electric Company. The work in this category is non-discretionary, and is randomly generated through public leak reports, programmed leak survey, mandated activities, and customer generated requests.

2 Project Detail

2.1 Background

This proposed blanket investment is to provide approved funding for the reactive replacement of gas services to address leaks and non-leak work activities that fall outside the normal scope of the integrity, reliability, public works and growth programs.

The proactive main and service replacement programs upgrade existing customer services prioritized by risk based on pressure, material, vintage, location, and select other variables. The potential for leakage and other maintenance activities on the



Short Form Sanction Paper

remaining services exists and requires a reactive response to correct the deficiency which is the focus of this request.

2.2 Drivers

The goal of this program is to reduce the risk associated with service leaks, damages, service abandonments due to inactivity or demolition requests, customer driven relocations of existing services, and other substandard conditions. The Drivers for this category are both Safety and Reliability.

2.3 Project Description

Approval is being requested for the necessary funding to replace as identified service leaks, damages, service abandonments due to inactivity or demolition requests, customer driven relocations of existing services, and other substandard conditions.

2.4 Benefits

The benefits of performing this work include:

- Elimination of the risk associated with these services.
- Improved community and government relations.
- Adherence to Regulatory compliance requirements.

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere.

2.6 Alternatives

These work activities are random, emergency driven, mandated and customer driven in nature, therefore, there is not an alternative to completing the activities.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.



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2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$1.450M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRFN219, CRFS219	N/A	Capital Leak Repair	6.000
CRFS210, CRFN210, CRFN309, CRFS309, CRFN310, CRFS310	N/A	Capital Non-Leak Repair	2.250
Total			8.250

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	Mandatory work activities related to emergency response and regulatory compliance as stipulated in the National Grid Maintenance Plan, DOT192 and State Requirements. There is also Policy-Driven work included in this sanctioning related to customer driven requests.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	



Short Form Sanction Paper

3.5 Asset Management Risk Score

Asset Management Risk Score: 40 (leaks)/21 (non-leak – Other)

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

3.6 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Sanction Paper Closeout

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17 - FY21_Gas- Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

4.1.1 If cost > approved Business Plan how will this be funded?

N/A



Short Form Sanction Paper

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CRFN219, CRFS219	Capital Leak Repair	Est Lvl (+/- 10%)	CapEx	-	5.625	-	-	-	-	-	5.625
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	0.375	-	-	-	-	-	0.375
			Total	-	6.000	-	-	-	-	-	6.000
CRFS210, CRFN210, CRFN309, CRFS309, CRFN310, CRFS310	Capital Non-Leak Repair	Est Lvl (+/- 10%)	CapEx	-	1.278	-	-	-	-	-	1.278
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.972	-	-	-	-	-	0.972
			Total	-	2.250	-	-	-	-	-	2.250
Total Project Sanction			CapEx	-	6.903	-	-	-	-	-	6.903
			OpEx	-	-	-	-	-	-	-	
			Removal	-	1.347	-	-	-	-	-	1.347
			Total	-	8.250	-	-	-	-	-	8.250

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	6.903	0.000	0.000	0.000	0.000	0.000	6.903
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	1.347	0.000	0.000	0.000	0.000	0.000	1.347
Total Cost in Bus. Plan	0.000	8.250	0.000	0.000	0.000	0.000	0.000	8.250

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Short Form Sanction Paper

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	March 2016
Construction Start Date	April 2016
Construction Complete	March 2017
Closure Paper	June 2017

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Keith Fowler, Philip Horowitz
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David
Procurement	Curran, Art
Control Center	Eagan, Mark J.

6.1.3 List References

N/A

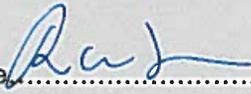


Short Form Sanction Paper

7 Decisions

The US Sanctioning Committee (USSC) at a meeting held on March 9, 2016:

- (a) APPROVE this paper and the investment of \$8.250M and a tolerance of +/- 10%
- (b) NOTE that Dan Sancomb is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature  Date 4/6/2016

Ross Turrini
Senior Vice President – Gas Process & Engineering
Chairman, US Sanctioning Committee



Short Form Sanction Paper

8 Other Appendices

N/A

8.1 *Sanction Request Breakdown by Project*

N/A



Spending Review

Title:	FY17 Mandated-Reactive Main/Service Replacements – Rhode Island	Sanction Paper #:	USSC-16-089C
Project #:	Multiple Funding Projects – see Appendix	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	July 12, 2017
Author:	Fredrick Pisani	Sponsor:	Neil Proudman, VP Maintenance & Construction NE Gas
Utility Service:	Gas	Project Manager:	Steven Lannon

1 Executive Summary

This paper is presented to close multiple funding projects – see Appendix. The total spend was \$10.071M. The sanctioned amount for this project was \$8.250M with a tolerance of +/- 10% (project grade).

The final spend amount is \$10.071M broken down into:

- \$7.906M Capex*
- \$0.000M Opex*
- \$2.165M Removal*

2 Project Summary

This program funds the Main & Service Replacement — Reactive Program for The Narragansett Electric Company. The work in this category is non-discretionary, and is randomly generated through public leak reports, programmed leak surveys, mandated activities, and customer generated requests.



Spending Review

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple - See Appendix	FY17 Service Replacement-Reactive Blanket - Rhode Island	Capex	7.906
		Opex	0.000
		Removal	2.165
		Total	10.071
Total		Capex	7.906
		Opex	0.000
		Removal	2.165
		Total	10.071

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	6.903
		Opex	0.000
		Removal	1.347
		Total Cost	8.250
Sanction Variance (\$M)			Total Spend
		Capex	(1.003)
		Opex	0.000
		Removal	(0.818)
		Total Variance	(1.821)



Spending Review

3.2 Analysis

The excess in actual leak receipts versus planned leak receipts is a contributing factor to the budget overrun. More work completed than planned, along with additional work in progress, is also a contributing factor to the overrun.

4 Improvements / Lessons Learned/Root Cause

This is a reactive program that is difficult to predict how many leaks will occur from year to year to determine the appropriate funding level to sanction. Currently the basis for developing the funding amount for this program is to look at a 1 year spending trend. In the future, the funding amount for this program will utilize the most recent 3 years of actual spend history to develop a more representative spending trend baseline.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including, but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed;
 - construction may cross multiple fiscal years;
 - the work order closing process is within the late charge waiting period; or



Spending Review

- other accounting processes or final system closing activities have not yet completed.

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including, but not limited to:

- design and/or construction have not yet completed;
- construction may cross multiple fiscal years;
- work has completed recently and as-builts have not yet been processed into the system; or
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database.

-Refer to Section 4 (Improvements/ Lessons Learned/ Root Cause.)



Spending Review

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
<i>Investment Planner</i>	M. Quan, Philip	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

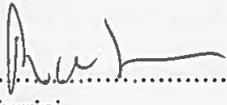
Function	Individual
Finance	Midkiff, Felicia
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul



Spending Review

7 Decisions

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on July 12, 2017.

Signature..........Date 7/12/17
Ross Turrini
Senior Vice President, Gas Process & Engineering and Chief Gas Engineer



Spending Review

8 Appendix

Sanction Paper Number	Original Approved Amount	Re-sanction Approved Amount	FP Proj No	FP Proj Description	ACTUAL			
					CAPEX	Removal	Open	Total
USSC-16-089	\$8,250,000	\$0	CON0029	Mandated Service & Service Cutoff	\$2,860	\$4,982	\$0	\$7,843
			CRCC210	React Main & Serv Work Nonleak-RI	\$694,321	\$4,191	\$0	\$698,512
			CRFN210	React Main & Serv Work Nonleak-RI	\$144,205	\$3,734	\$0	\$147,943
			CRFN219	Leak Invest/Repair Serv & Main-RI	\$706,114	\$55,247	\$0	\$761,361
			CRFN309	Service Demolitions-RI	(\$3,964)	\$158,476	\$0	\$154,512
			CRFN310	Cappd Alive-IRA/IRMA- RI	\$5,250	\$232,310	\$0	\$237,560
			CRFS210	React Main & Serv Work Nonleak-RI	\$667,467	\$71,948	\$0	\$739,415
			CRFS219	Leak Invest/Repair Serv & Main-RI	\$5,528,089	\$725,941	\$0	\$6,254,030
			CRFS309	Service Demolitions-RI	(\$2,566)	\$204,682	\$0	\$202,116
			CRFS310	Cappd Alive-IRA/IRMA- RI	\$164,459	\$703,448	\$0	\$867,907
USSC-16-089 Total					\$7,906,239	\$2,164,960	\$0	\$10,071,198



Short Form Sanction Paper

Title:	FY17 Cast Iron Joint Encapsulation – Reactive Blanket – Rhode Island	Sanction Paper #:	USSC-16-138
Project #:	CRFN211, CRFS211	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 15, 2016
Author:	Fred Amaral	Sponsor:	Neil Proudman – VP Gas Operations, NE
Utility Service:	Gas	Project Manager:	Dan Sancomb

1 Executive Summary

1.1 Sanctioning Summary

This paper requests the sanction of CRFN211, CRFS211 in the amount of \$3.050M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$3.050M broken down into:

- \$3.038M Capex*
- \$0.000M Opex*
- \$0.012M Removal*

1.2 Project Summary

This proposed blanket investment is to provide approved funding for the repair of cast iron bell joints that are discovered randomly during the proactive leakage surveys or discovered following public odor calls.

2 Project Detail

2.1 Background

The proactive main and service replacement programs upgrade existing main piping and customer services as prioritized by risk based on pressure, material, vintage, location, and select other variables. The potential for leakage on joint connections on the remaining underground piping exists and requires a reactive response to correct the deficiency which is the focus of this request.



Short Form Sanction Paper

2.2 Drivers

The goal of this program is to reduce the risk associated with cast iron joint connections. The Drivers for this category are both Safety and Reliability.

2.3 Project Description

Approval is being requested for the necessary funding to repair leaking cast iron joints.

2.4 Benefits

The benefits of performing this work include:

- Elimination of the risk associated with these joints.
- Improved community and government relations.
- Adherence to Regulatory compliance requirements.

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere.

2.6 Alternatives

These work activities are random, emergency driven and mandated, therefore, there is not an alternative to completing the activities.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.638M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



Short Form Sanction Paper

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRFN211, CRFS211	NA	Cast Iron Joint Leak Repair	3.050
Total			3.050

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	Mandatory work activities related to emergency response and regulatory compliance as stipulated in the National Grid Maintenance Plan, DOT192 and State Requirements. There is also Policy-Driven work included in this sanctioning related to customer driven requests.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	



Short Form Sanction Paper

3.5 Asset Management Risk Score

Asset Management Risk Score: 40

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

3.6 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Sanction Paper Closeout

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17 – FY21_Gas- Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

The basis of the budget estimate is historical spending levels.

4.1.1 If cost > approved Business Plan how will this be funded?

N/A



Short Form Sanction Paper

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22			
CRFN211, CRFS211	Cast Iron Joint Leak Repair	Est Lvl (e.g. +/- 10%)	CapEx	-	3.038	-	-	-	-	-	-	3.038	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.012	-	-	-	-	-	-	-	0.012
			Total	-	3.050	-	-	-	-	-	-	-	3.050
0	0	Est Lvl (e.g. +/- 10%)	CapEx	-	-	-	-	-	-	-	-		
			OpEx	-	-	-	-	-	-	-	-		
			Removal	-	-	-	-	-	-	-	-		
			Total	-	-	-	-	-	-	-	-		
Total Project Sanction			CapEx	-	3.038	-	-	-	-	-	-	3.038	
			OpEx	-	-	-	-	-	-	-	-		
			Removal	-	0.012	-	-	-	-	-	-	0.012	
			Total	-	3.050	-	-	-	-	-	-	3.050	

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	3.038	0.000	0.000	0.000	0.000	0.000	3.038
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.012
Total Cost in Bus. Plan	0.000	3.050	0.000	0.000	0.000	0.000	0.000	3.050

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	March 2016
Begin Construction	April 2016
Complete Construction	March 2017
Sanction Paper Closure	June 2017



Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
Investment Planner	Patrick Pensabene	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith, Philip Horowitz
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David
Procurement	Curran, Art
Control Center	Eagan, Mark J.

6.1.3 List References

N/A

Short Form Sanction Paper



7 Decisions

I:

(a) APPROVE this paper and the investment of \$3.050M and a tolerance of +/-10%

(b) NOTE that Dan Sancomb is the Project Manager and has the approved financial delegation.

Signature  Date 3/23/16

Executive Sponsor – Ross Turrini, SVP Gas Process and Engineering



Short Form Sanction Paper

8 *Other Appendices*

8.1 *Sanction Request Breakdown by Project*

N/A



Spending Review Closure

Title:	FY17 CI Joint Encapsulation Reactive Blanket-RI	Sanction Paper #:	USSC-16-138C
Project #:	Multiple – See Appendix	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	July 25, 2017
Author:	Fredrick Pisani	Sponsor:	Neil Proudman, VP Maintenance & Construction NE Gas
Utility Service:	Gas	Project Manager:	Steve Lannon

1 Executive Summary

This paper is presented to close multiple funding projects – see Appendix. The total spent was \$4.171M. The sanctioned amount for this project was \$3.050M at +/- 10% (project grade).

The final spend amount of \$4.171M is broken down into:

- \$4.168M Capex*
- \$0.000M Opex*
- \$0.003M Removal*

2 Project Summary

This blanket investment is to provide funding for the repair of cast iron (“CI”) bell joints that are discovered randomly during proactive leakage surveys or discovered following public odor calls.



Spending Review Closure

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple - See Appendix	FY17 CI Joint Encapsulation-Reactive Blanket-RI Closure	Capex	4.168
		Opex	0.000
		Removal	0.003
		Total	4.171
Total		Capex	4.168
		Opex	0.000
		Removal	0.003
		Total	4.171

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.038
		Opex	0.000
		Removal	0.012
		Total Cost	3.050
Sanction Variance (\$M)			Total Spend
		Capex	(1.130)
		Opex	0.000
		Removal	0.009
		Total Variance	(1.121)

3.2 Analysis

The actual spend variance is 3% and is within the +/- 10% tolerance.



Spending Review Closure

4 Improvements / Lessons Learned/Root Cause

This is a reactive program that it is difficult to predict how many leaks will occur from year to year to determine the appropriate funding level to sanction. Currently the basis for developing the funding amount for this program is to look at a 1 year spending trend. In the future, the funding amount for this program will utilize the most recent 3 years of actual spend history to develop a more representative spending trend baseline. Using a 3 year average will take into account many different fluctuations in weather conditions that ultimately affects this work. A 1 year spending trend can potentially miss this information. As a result of the mild winter, National Grid was also able to complete an increased number of CI joint encapsulations. The total number of joint encapsulations completed was 542 against a plan of 493. The over spend is due to the additional leaks and additional CI joints that were repaired.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and/or funding projects which have not yet been closed for reasons including, but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed;
 - construction may cross multiple fiscal years;
 - the work order closing process is within the late charge waiting period; and/or



Spending Review Closure

- other accounting processes or final system closing activities have not yet completed.

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including, but not limited to:
- design and/or construction have not yet completed;
 - construction may cross multiple fiscal years;
 - work has completed recently and as-builts have not yet been processed into the system; and/or
- (3) All lessons learned have been entered appropriately into the lesson learned database.
-Refer to Section 4 (Improvements/ Lessons Learned/ Root Cause).

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
Investment Planner	M. Quan, Philip	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

Spending Review Closure



6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Midkiff, Felicia
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

Spending Review Closure



7 Decisions

I approve this paper.

Signature...  Date... 

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer



Spending Review Closure

8 Appendix A

Company	Category	Sanction Paper Number	Original Approved Amount	Re-sanction Approved Amount	FP Proj No	FP Proj Description	Actuals								
							CAPEX	Revised	OPEX	Total					
5360-Narragansett Electric and	Mandated-Main/Repl O Joint Encapsulation	USSC-16-138	\$3,050,000	00	009267	O Joint Encapsulation	42,233		00	42,233					
					CON825	Mandated Service & Service Cutoff	101		00	101					
					CON830	Leak Repair scheduled/unscheduled	13,318		00	13,318					
					CRCC102	New Bus - Repl -R	12,516		00	12,516					
					CRCC104	New Bus - Core -R	13,955		00	13,955					
					CRCC203	500 Steel Man Replace-R	16,753		00	16,753					
					CRCC207	O Man Replace < 10'-R	10,572		00	10,572					
					CRCC306	Main Repl Pub work non-rev-R	1,758		00	1,758					
					CRCC312	Gas Man Encroach Undermined-R	13,367		00	13,367					
					CRNE10	React Man & Serv Work Nonrepl-R	15,072		00	15,072					
					CRNE11	O Joint Encapsulation (R) hub rule	1236		00	1,236					
					CRPE19	Leak Invert/Repair Serv & Man-R	1,368,854		00	1,368,854					
					CRPE10	Capped Alve-PA/RMA- R	13,101		00	13,101					
					CRFS10	React Man & Serv Work Nonrepl-R	15,135		00	15,135					
					CRFS21	O Joint Encapsulation (R) hub rule	156,895	13,204	00	170,100					
					CRFS19	Leak Invert/Repair Serv & Man-R	13,639,430		00	13,639,430					
					CRFS10	Capped Alve-PA/RMA- R	19,531		00	19,531					
					USSC-16-138 Total							14,167,635	13,204	00	14,180,839

*Work Orders open at time of the audit, March 2017.



Short Form Sanction Paper

Title:	FY17 Gas System Reliability Program – RI	Sanction Paper #:	USSC-16-012
Project #:	CRCC401	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	February 16, 2016
Author:	Adnan Malik / Eric Aprigliano	Sponsor:	John Stavrakas – Acting Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	William Mycroft

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRCC401 in the amount \$1.500M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$1.500M broken down into:

- \$1.447M Capex*
- \$0.000M Opex*
- \$0.053M Removal*

1.2 Project Summary

The gas system reliability program is comprised of projects that provide operational benefits to customers beyond those of traditional gas system reinforcement projects, focusing on improving overall system reliability. The overall reliability of a gas distribution system relates its ability to maintain continuous service to existing customers during abnormal operating conditions (e.g., unexpected shutdown of a pipeline facility). Construction of the projects proposed in this program will improve reliability for over 850 Rhode Island gas distribution system customers.

2 Project Detail

2.1 Background

The Long Term Planning reliability projects are identified and developed to improve the overall reliability of the company transmission and distribution systems. The Rhode Island distribution network consists of over fifty (50) independent distribution and feeder systems. Pressure and flow on the system is controlled through a network of cascading feeder and distribution systems fed by eighteen (18) take stations and production facilities and consisting of one hundred ninety eight (198) regulator stations.



Short Form Sanction Paper

Reliability is defined in this context as the likelihood or probability of experiencing customer service outages on all or portions of these systems. The distribution network layout and operation of these systems vary significantly by area. Differences in design practices of legacy companies over many decades have resulted in significant variation in levels of reliability throughout Rhode Island, and the entire US gas distribution service territory. In some cases, expansion of both the customer base and distribution mains has resulted in changes on the system that impact reliability over time (i.e., probability and number of customers at risk increases). Reliability is assessed by reviewing the ability of various operating systems to respond to abnormal operating conditions (e.g., shutdown of pipeline or facility). Gas system reliability concerns include transmission and distribution systems with limited number of feeds (i.e., take stations or regulator stations), systems that are either weakly integrated or consist of long single-feed laterals, networks that contain a wide variety of operating pressures, pressure regulating equipment in areas prone to flooding, and varying design philosophies associated with system and equipment redundancy (e.g., production plants, take stations, regulator stations).

Reliability projects which improve reliability and operation of the distribution system in a cost-efficient manner are identified and proposed for construction. Prospective projects are evaluated for additional system benefits and synergy with other proposed capital projects and often have the added benefit of increasing system capacity and improving operability of the network. In addition, many of these projects also create the opportunity to replace or abandon leak-prone pipe, providing a benefit to the integrity program or be combined with public works activities.

2.2 Drivers

The goal and primary driver of the program is to improve overall system reliability. This year's program improves reliability for at least approximately 850 existing customers. The program includes a variety of types of projects that create flexibility in how the system is operated and adaptability for abnormal system operation scenarios.

A major driver in the FY 2016/17 Program looks to improve reliability in operability and maintenance of system regulators under adverse conditions while removing risks of customer outages. Almost every project hopes to integrate a single-feed system into other nearby larger system. There is a significant reliability benefit achieved in reducing the number of isolated systems that exist by connecting them to larger systems. The three (3) major benefits are: first, it creates new connections into distribution systems for better supply into the system; second, it reduces the possibility of customer outages in the event of a regulator abnormal operation issue or third-party damage; and third, in some cases a regulator can be abandoned once the isolated system is connected to the larger distribution system, reducing O&M costs. One method is via system downgrading, while three additional projects in the FY2017 reliability program look to increase reliability by replacing inventory of leak-prone pipe and transferring customers to a higher pressure system.



Short Form Sanction Paper

2.3 Project Description

The gas planning program includes the design, procurement, construction, testing, and completion of capital projects. A full list of the Gas Planning Reliability Program projects for Rhode Island is in Appendix 1. The projects, totaling \$1.500M, are organized by the following work types:

- **Take Station – One (1) Project \$0.10M**
As part of the AIM project, Spectra will be completing the majority of the work in activating the Crary St Take Station as a supply point into the Rhode Island 99 psig distribution system. However, supplementary work and support would be required by National Grid personnel and engineering that would facilitate the operability of the take station coincidentally with Spectra, including any assistance with the tie-ins to the outlet pipeline of the station.
- **Single Feed System Elimination – Four (4) Projects - \$1.24M**
There are currently over 150 distribution systems fed by a single district regulator across the U.S. distribution system, with 27 in the legacy Rhode Island Company. These projects improve overall reliability by working towards reducing that number. Two projects are initial phases of a phased approach towards eliminating two separate district regulators by upgrading the downstream distribution system and integrating with the higher pressure 99 psig system in Lincoln and 60 psig system in Woonsocket. Another project similarly is a phased approach towards integration of a single feed 35 psig system and a dead-end 10 psig system in Newport. Ideally, projects that involve a pressure upgrade or upgrading are preferred when easily feasible, as system capacity is also improved enabling the addition of new customers without reinforcement. However, certain conditions make downgrading a more feasible option such as the proposed project in East Providence allowing the system to be integrated with the Pawtucket 18 psig system.
- **Carry-Over Costs for Fiscal Year 2016 Projects Placeholder - \$0.16M**
These costs are for the completion and closeout of projects in Bristol from FY16 construction.

2.4 Benefits

In summary, the above mentioned work will improve reliability to over 850 customers. The projects work towards the elimination of four (4) single feed district regulators, one by the end of the Fiscal Year 17, and also benefits System Integrity's risk assessment program with the replacement of 4,952 LF of leak-prone pipe.

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere.

2.6 Alternatives

Alternative 1: Do Nothing/Deferral



Short Form Sanction Paper

The consequences of not completing the proposed work would result in a failure to take advantage of cost-effective ways to improve distribution system reliability in a proactive manner as discussed above. It could also potentially result in disruption of service for up to approximately 850 customers with adverse operation conditions.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.304M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
CRCC401	Gas System Reliability - RI	1.500
Total		1.500

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	National Grid's goal is to operate a reliable gas distribution system and thus maintain continuous, uninterrupted service to all customers throughout the year.



Short Form Sanction Paper

3.5 Asset Management Risk Score

Asset Management Risk Score: 33

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability Environment Health & Safety Not Policy Driven

3.6 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
July 2017	Project Closure

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-FY21 Gas Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.000

4.1.1 If cost > approved Business Plan how will this be funded?

N/A

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
CRCC401	Gas System Reliability - RI	+/- 10%	CapEx	-	1.447	-	-	-	-	-	-	1.447	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.053	-	-	-	-	-	-	-	0.053
			Total	-	1.500	-	-	-	-	-	-	-	1.500



Short Form Sanction Paper

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	1.448	0.000	0.000	0.000	0.000	0.000	1.448
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.053	0.000	0.000	0.000	0.000	0.000	0.053
Total Cost in Bus. Plan	0.000	1.500	0.000	0.000	0.000	0.000	0.000	1.500

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanctioning Approval	02/2016
Begin Construction	04/2016
Projects in Service	11/2016
Construction Complete	03/2017
Project Closeout	07/2017

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
<i>Resource Planning</i>	Vidal, Alfredo	Endorses resources, cost estimate, schedule, and portfolio alignment.
<i>Project Management</i>	Michel, Michael	Endorses resources, cost estimate, and schedule.
<i>Gas Project Estimation</i>	Paul, Arthur	Endorses cost estimate.

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Short Form Sanction Paper



Reviewer List	Individual
<i>Finance</i>	Fowler, Keith
<i>Finance</i>	Horowitz, Phillip
<i>Regulatory</i>	Zschokke, Peter
<i>Jurisdictional Delegates</i>	Iseler, David G.
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Eagan, Mark J.

6.1.3 List References

1	US Enterprise 5-Year Distribution System Reinforcement & Reliability Plan
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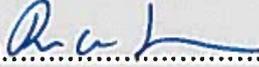
Short Form Sanction Paper



7 Decisions

I:

- (a) APPROVE this paper and the investment of \$1.500M and a tolerance of +/- 10%
- (b) NOTE that William Mycroft is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any blanket projects are not approved prior to the start of the FY18 fiscal year, the FY17 approval limits will remain in effect until such time as the FY18 blanket projects are approved by the USSC and/or other appropriate authority for approval.

Signature  Date 3/1/2016

Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering



Short Form Sanction Paper

8 Other Appendices

8.1 Sanction Request Breakdown by Project

Appendix 1 – FY17 Rhode Island Reliability Projects

Work Type	Town	Project Description	Length	Size	Material	MAOP	Estimate	Estimate Level	Reason for Project
Single Feed Elimination	East Providence	Downrate EPV 35# SF system to 18# (165 customers, 23,000LF). Coordinate with Pressure Regulation Station replacements of RIS-067 & RIS-056. Down-rating of Regulator Station 067 @ Roger Williams & Whitaker to 18 psig. Install 130 LF of 6-in PE 18 psig main on Narragansett Park Dr from #700 to #750. Install 130 LF of 6-in PE 18 psig main on Narragansett Park Dr from #411 to #435.	260	6	PL	35 to 18	\$150,000	1	Project improves reliability of the distribution system by eliminating a single-feed district regulator
Main-Relay	Lincoln	Phase 1 of 3 to eliminate the Quinn LP Single-Feed Regulator (RC015). Relay of 1,165 LF of 4-in CI LP main on Lower River Rd with 4-in PE 99 psig from Cullen Hill to Ave B (10 svcs), 215 LF of 2-in BS LP main on Ave A with 2-in PE 99 psig from Lower River Rd to EOM (2 svcs), 270 LF of 4-in CI, PE LP main on Ave B with 2-in PE 99 psig from Lower River Rd to EOM (5 svcs).	1,350	4	PL	99	\$218,638	1	Initial phase of a project that eliminates leak prone pipe, a single feed district regulator, and an LP system
System Upratings and Deratings	Newport	Relay 1,200 LF of 4-in CI 10 psig with 6-in PE 35 psig on Wellington Ave from #35 to Harrison Ave (relay 10 services), transfer service for #4 Halidon Ave to existing 6-in PE 35 psig, & abandon 286 LF of 4-in PL 10 psig on Halidon Ave S/ Harrison Ave. Disconnect 6-in PE 10 psig main on Wellington @ Roseneath, connecting to 8-in PE 35 psig on Wellington, & uprate 1,970 LF of 6-in PE 10 psig (2012) on Wellington Ave from #35 to Roseneath St (8 services) and 762 LF of 2-in PE 10 psig (1992) on Columbus Ave (3 services). Cut & Cap 4-in CI 10 psig at Wellington @ Thames, abandoning 990 LF of 4-in CI, 472 LF of 6-in PL 10 psig main on Wellington Ave.	1,220	6	PL	35	\$393,742	1	Improves system reliability by consolidating 2 dead-end laterals on two different pressure systems.
LNG Reduction	Providence	Manchester St Gate Station 99# distribution system outlet activation. Includes associated engineering and labor work not covered by Spectra.				99	\$100,000	0	Project improves reliability by reducing dependency on Providence LNG facility pressure support.
Carryover	Various	Carry-over costs associated with 2015/16 Projects					\$163,000		
Main-Relay	Woonsocket	Phase 1 of 3 to eliminate the Woonsocket / Newland LP Single-Feed Regulator (RIN-C011). Transfer 9 services from LP to HP on Cumberland Hill Rd S/ Alysworth Ave and abandon 607 LF of 6-in CI LP. Relay of 582 LF of 6-in CI LP, 6-in BS, 6-in PE (520 LPP) LP main on Cady St with 640 LF of 2 in PE 60 psig from Cumberland Hill Rd to Guertin St (10 svcs), 1789 LF of 4-in CI LP main on Alysworth Ave with 2-in PE 60 psig from Cumberland Hill Rd to existing 60 psig main (23 svcs), 326 LF of 4-in BS, 6-in DI, 2-in PE LP main on Guertin St with 2-in PE 60 psig from Alysworth Ave to EOM (3 svcs).	3,043	2	PL	60	\$475,040	1	Initial phase of a project that eliminates leak prone pipe, a single feed district regulator, and an LP system



Short Form Sanction Paper

Appendix 2 – Outage Restoration Costs

Estimates for relighting customers and recovering from a system outage have been prepared to quantify the impact of outages related to insufficient system capacity during periods of peak demand and severe winter cold.

Actual relight costs have been captured from recent incidents to quantify company expenses related to restoring service. These were all related to outages that occurred for reasons other than insufficient system capacity and operations were conducted under benign weather conditions. It is likely that during severe winter weather, costs would increase.

Claims related to frozen buildings, burst pipes and equipment damage due to a lack of heat during severe cold weather were captured from the only incident in recent times the company experienced – e.g. the outage in Hull, Ma during the peak day of January 16th, 2004.

Relight Costs

Tiverton (2008): 900 customer outage with relight costs of \$322,839 for an average relight cost of \$358.71 per customer.

Cutchoque (2003): 1,800 customer outage with relight costs of \$2,367,401 with an average relight cost of \$1,315.22

Glen Cove (2008): 1,016 customer outage with relight costs of \$275,000 for an average relight cost of \$270.67 per customer

Westerly, RI (2011): 1,686 customer outage with relight costs of \$2,811,455 for an average relight cost of \$1,667.53 per customer

Average cost to relight for combined instances above equals \$1,069 per customer

Claims

Hull (2004): 297 customers affected with claims totaling \$206,336 for an average claim of \$694.73 per customer

Combined cost of relight and claims

The combined cost of relighting customers and resolving claims averages out to \$1,764 per customer.

Recognizing the amount of variability in different incidents such as weather conditions, different types of neighborhoods, variable labor costs, economies of scale, etc., for purposes of evaluating the benefits of reinforcement projects, an average value of service restoration costs and claims of \$1,000 per customer is used.



Spending Review

Title:	FY17 Gas System Reliability Program - RI	Sanction Paper #:	USSC-16-012C
Project #:	CRCC401	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	July 11, 2017
Author:	Adnan Malik / Eric Aprigliano	Sponsor:	John Stavrakas -Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	William Mycroft

1 Executive Summary

This paper is presented to close CRCC401. The total spend was \$1.066M. The sanctioned amount for this project was \$1.500M with a tolerance of +/- 10% (project grade).

The final spend amount is \$1.066M broken down into:
 \$1.000M Capex
 \$0.000M Opex
 \$0.066M Removal

2 Project Summary

This is the annual sanction closure of the Gas System Reliability program for Rhode Island. The Gas System Reliability program is comprised of projects that provide operational benefits to customers beyond those of traditional gas system reinforcement projects, focusing on improving overall system reliability. The overall reliability of a gas distribution system relates its ability to maintain continuous service to existing customers during abnormal operating conditions (e.g., unexpected shutdown of a pipeline facility). Construction of the projects in this program improve reliability for over 850 Rhode Island gas distribution system customers. Overall, the program was successful and no abnormal system issues arose during FY17.



Spending Review

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRCC401	FY17 Gas System Reliability Program - RI	Capex	1.000
		Opex	0.000
		Removal	0.066
		Total	1.066
Total		Capex	1.000
		Opex	0.000
		Removal	0.066
		Total	1.066

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.447
		Opex	0.000
		Removal	0.053
		Total Cost	1.500
Sanction Variance (\$M)			Total Spend
		Capex	0.446
		Opex	0.000
		Removal	(0.013)
		Total Variance	0.434

3.2 Analysis

The total program costs came in approximately 29% below the sanction approval estimate. The major driver of the total cost variance is due to all proposed projects not being constructed. A total of two of the five projects in the original program sanctioning were constructed in FY17 and accounted for the majority of the spend. Delays in permitting and coordination with Spectra pipeline operator caused one project to not be completed. Two projects were deferred to FY18 due to coordination with other related capital projects. In addition, paving and restoration costs were not incurred on the completed projects due to time of the year they were completed. Those costs are expected to be incurred in FY18.



Spending Review

4 Improvements / Lessons Learned/Root Cause

Coordination with Construction should occur in order to ensure program projects are scheduled earlier so that total costs and projects can be completed within the same fiscal year. This is conducted via bi-weekly meetings by Resource Planning to ensure focus on these projects, establish project schedules and milestones, identify and mitigate risks timely, and enable reporting accuracy on the progress of projects and the overall program. Additional outreach will be pursued to determine and allocate sufficient funds for paving and restoration not completed during construction within the fiscal year prior to budgeting.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and/or funding projects which have not yet been closed for reasons including, but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed;
 - construction may cross multiple fiscal years;
 - the work order closing process is within the late charge waiting period; or
 - other accounting processes or final system closing activities have not yet completed.



Spending Review

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including, but not limited to:
 - design and/or construction have not yet completed;
 - construction may cross multiple fiscal years;
 - work has completed recently and as-builts have not yet been processed into the system; or
 - does not apply. Work order(s) are not linked to work management systems. (i.e., Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)

- (3) All lessons learned have been entered appropriately into the lesson learned database
 - Refer to Section 4 (Improvements/ Lessons Learned/ Root Cause)

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick Quan, Philip	Endorses relative to 5-year business plan or emergent work
<i>Project Management</i>	Fortier, Joseph Jr.	Endorses Resources, cost estimate, and schedule
<i>Resource Planning</i>	Falls, Jonathan	Endorses Resources, cost estimate, schedule, and portfolio alignment
<i>Gas Project Estimation</i>	Paul, Art	Endorses cost estimate

6.2 Reviewers

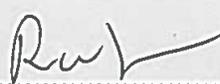
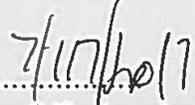
The reviewers have provided feedback on the content/language of the paper.

Function	Individual
<i>Finance</i>	Midkiff, Felicia
<i>Regulatory</i>	Gurry, Renee
<i>Jurisdictional Delegate</i>	Currie, John
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Loiacono, Paul



Spending Review

7 Decisions

I approve this paper.	
Signature..... 	Date..... 
Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering and Chief Engineer – Gas	



Short Form Sanction Paper

Title:	FY17 Instrumentation & Regulation (I&R) – Reactive Blanket - RI	Sanction Paper #:	USSC-16-126
Project #:	CRIC213, CON0038	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 15, 2016
Author:	John Barrett/Maureen Daly	Sponsor:	Neil Proudman – Vice President , NE Gas Operations
Utility Service:	Gas	Project Manager:	John Barrett

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRIC213 in the amount \$1.000M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$1.000M broken down into:

- \$1.000M Capex*
- \$0.000M Opex*
- \$0.000M Removal*

1.2 Project Summary

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 pressure regulating facilities in the Rhode Island service territory. The Instrumentation and Regulation (I&R) Reactive Capital Program focuses on capital upgrades/improvements and replacements of pressure regulating facilities throughout the year. This program contributes to the high reliability of the Rhode Island distribution system.

2 Project Detail

This program is an annual capital improvement/replacement program. During the course of the year several projects are highlighted by I&R field staff due to equipment



Short Form Sanction Paper

damage and/or unsatisfactory operating issues. Projects mainly include valve replacements, regulator replacements and instrumentation upgrades/replacements.

2.1 Background

This program is an annual capital program. The work plan mainly consists of projects that are highlighted by the various field supervisors over the course of the year. During maintenance inspections crews come across broken doors, broken valves, etc. that need to be replaced as soon as possible. Lightning storms, vehicles hitting traffic boxes, etc. also lead to instrumentation being damaged and in need of immediate replacement.

2.2 Project Description

The I&R Reactive budget is designed to address capital project requirements over and above what the Pressure Regulation Capital budget provides. I&R Reactive projects range from instrumentation replacement due to weather or vehicular damage, replacement of obsolete/unreliable equipment, such as regulators, pilots, boilers, heat exchangers, odorant equipment and replacement of building roofs or doors due to deterioration. There are approximately 194 I&R facilities in Rhode Island that require continuous assessment. In addition to the above mentioned work, valve replacements are also included in this budget.

2.3 Benefits

The reactive regulator program will help to ensure continuous and reliable service to our customers. This program will increase reliability by refurbishing existing stations, and replacing obsolete/unreliable equipment. In many cases capital replacement are required as soon as possible. This budget allows the I&R group to react swiftly to any operational deficiencies.

2.4 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere

2.5 Alternatives

Alternative 1: Do Nothing/Defer Project

Doing nothing or deferring this program does not meet our obligation to provide safe and reliable gas service, nor the longer term objective of improving the operation and performance of the pressure regulating stations. The consequences of not completing the work scheduled will result in increased risks associated with the failure of station equipment, and/or the stations associated piping. Specifically,



Short Form Sanction Paper

failure to complete identified work would reduce the integrity of the system and potentially result in significant customer outages.

2.6 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.6.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.210M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRIC213		I&R - Reactive Program - RI	1.000
Total			1.000

3.2 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
CRIC402	Pressure Regulating Facilities	1.500
Total		1.500

3.3 Prior Sanctioning History

N/A



Short Form Sanction Paper

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	National Grid Document ENG01001 – “Design of Gas Regulator Stations – Part 1”
<input checked="" type="radio"/> Policy- Driven	National Grid Document ENG01002 – “Design of Gas Regulator Stations – Part 2”
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

3.5 Asset Management Risk Score

Asset Management Risk Score: 40

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability Environment Health & Safety Not Policy Driven

3.6 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Project Closure



Short Form Sanction Paper

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-FY21 Gas-Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

The basis of the budget estimate is historical spending levels.

4.1.1 If cost > approved Business Plan how will this be funded?

N/A

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
Proj Num	Proj Name	Est Lvl (e.g. +/- 10%)	CapEx	-	1.000	-	-	-	-	-	-	1.000
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	1.000	-	-	-	-	-	-	1.000
Total Project Sanction			CapEx	-	1.000	-	-	-	-	-	-	1.000
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	1.000	-	-	-	-	-	-	1.000

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000



Short Form Sanction Paper

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Approval	March 2016
Construction start	April 2016
Construction complete	March 2017
Project Closure	June 2017

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate



Short Form Sanction Paper

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.



Short Form Sanction Paper

7 Decisions

I:

- (a) APPROVE this paper and the investment of \$1.000M and a tolerance of +/-10%
- (b) NOTE that John Barrett is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature  Date 

Executive Sponsor – Ross Turrini, SVP, Gas Process & Engineering



Short Form Sanction Paper

8 Other Appendices

8.1 *Sanction Request Breakdown by Project*

N/A

Spending Review Closure



Title:	FY17 Instrumentation & Regulation (I&R) – Reactive Blanket - RI	Sanction Paper #:	USSC-16-126C
Project #:	CRIC213	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	08/01/2017
Author:	John Barrett/Maureen Daly	Sponsor:	Neil Proudman – Vice President, NE Gas Operations
Utility Service:	Gas	Project Manager:	John Barrett

1 Executive Summary

This paper is presented to close CRIC213. The total spend was \$1.042M. The latest amount for this project was \$1.000M with a tolerance of +/- 10% (project grade).

The final spend amount is \$1.042M broken down into:

- \$1.041M Capex*
- \$0.000M Opex*
- \$0.001M Removal*

2 Project Summary

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 pressure regulating facilities in the Rhode Island service territory. The Instrumentation and Regulation (I&R) Reactive Capital Blanket focuses on capital upgrades/improvements and replacements of pressure regulating facilities throughout the year. This blanket contributes to the high reliability of the Rhode Island distribution system.



Spending Review Closure

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRIC213	Pres Reg Facil - Reactive-RI	Capex	1.041
		Opex	0.000
		Removal	0.001
		Total	1.042
Total		Capex	1.041
		Opex	0.000
		Removal	0.001
		Total	1.042

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.000
		Opex	0.000
		Removal	0.000
		Total Cost	1.000
Sanction Variance (\$M)			Total Spend
		Capex	(0.041)
		Opex	0.000
		Removal	(0.001)
		Total Variance	(0.042)

3.2 Analysis

The actual spend variance is at 4.2%, which and is within the +/- 10% tolerance.

4 Improvements / Lessons Learned / Root Cause

Starting in FY16, the Company reassigned the funding of valve replacements at regulator stations from the engineering budget to the I&R Reactive funding project. Since the capital budget for this program was originally derived by historical and estimated spending, adding valve replacements caused an slight increase in costs for



Spending Review Closure

this blanket.

The Instrumentation & Regulation group is working more closely with Pressure Regulation Engineering among other groups to track the money being spent and to improve project forecasts. The FY18 budget/sanction takes into account the additional cost of valve replacements.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and/or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed;
 - construction may cross multiple fiscal years;
 - the work order closing process is within the late charge waiting period; and/or
 - other accounting processes or final system closing activities have not yet completed.

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

Spending Review Closure



- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:
- design and/or construction have not yet completed;
 - construction may cross multiple fiscal years; and/or
 - work has completed recently and as-builts have not yet been processed into the system.

- (3) All lessons learned have been entered appropriately into the lesson learned database

Refer to Section 4, Improvements/Lessons Learned/Root Cause.

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M Quan, Philip	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

Spending Review Closure



6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

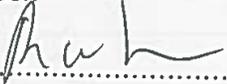
Function	Individual
Finance	Midkiff, Felicia
Regulatory	Curry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

Spending Review Closure



7 Decisions

I approve this paper.

Signature..... Date 10/24/17

Ross Turrini
Senior Vice President, Gas Process & Engineering and Chief Gas Engineer



Short Form Sanction Paper

Title:	FY17 LNG Reliability Blanket – Narragansett Gas	Sanction Paper #:	USSC-16-159
Project #:	Multiple (see table 3.1)	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 29, 2016
Author:	K'Chebe Grace	Sponsor:	Fikret Su-Director LNG
Utility Service:	Gas	Project Manager:	KChebe Grace

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of multiple funding projects (see table 3.1) in the amount \$0.800M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$0.800M broken down into:

- \$0.800M Capex*
- \$0.000M Opex*
- \$0.000M Removal*

1.2 Project Summary

The capital work to be sanctioned under this program includes activities such as:

- Upgrades and improvements to equipment e.g., compressors, tanks and auxiliary plant systems
- Upgrades and replacement control systems
- Operational efficiency improvement
- Upgrades to equipment for process safety improvements

An effective LNG Operations Capital program allows us to meet mandate requirements as well as significantly extend the service life of critical production facilities and process safety improvements for plant equipment. These projects also contribute to the overall reliability of the plants.

2 Project Detail

2.1 Background

Plant systems, equipment and facilities require continuing upkeep and modification to provide for safe, reliable and compliant operations. The capital programs provide for replacement of obsolete and/or deteriorating equipment, systems and processes and improvements to enhance the safe operation of the facilities.



Short Form Sanction Paper

The capital work to be sanctioned under this program includes activities such as:

- Upgrades and improvements to equipment e.g., compressors, tanks and auxiliary plant systems
- Upgrades and replacement control systems
- Operational efficiency improvement
- Upgrades to equipment for process safety improvements

An effective LNG Operations Capital program allows us to meet mandate requirements as well as significantly extend the service life of critical production facilities and process safety improvements for plant equipment. These projects also contribute to the overall reliability of the plants.

2.2 Drivers

The primary drivers of the LNG capital spend program are:

1. CFR 193, CMR 220, NFPA 59 and NFPA 59A code requirements contain standards for LNG Facilities.
2. Quantitative Risk Assessments
3. LNG Plant operational reliability
4. Process, Public and Employee safety
5. Process Hazards Analysis Action Items
6. Operational efficiencies

2.3 Project Description

This program would provide funding to complete various projects within the four LNG plants and in support of the Engines Group.

The capital work to be sanctioned under this program includes activities such as:

- Upgrades and improvements to mechanical equipment and systems
- Upgrades and replacement of electrical and control systems, including safety shutdown systems.
- Structural improvements of plant and facilities
- Procurement of capital tools and equipment

2.4 Benefits

The benefit of following the capital work plan includes activities such as:

- Upgrades and improvements LNG pumps, vaporizers, and liquefaction systems
- Upgrades and replacement control systems
- Structural improvements



Short Form Sanction Paper

- An effective LNG Operations Capital program allows us to meet mandate requirements as well as significantly extend the service life of critical production facilities.

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere

2.6 Alternatives

Alternative 1: Do Nothing

The "Do Nothing" alternative does not address potential reliability and safety risks associated with not replacing obsolete and/or deteriorating equipment, systems and facilities that are reaching the end of their useful life, or modifying/enhancing equipment needed to operate facilities safely and reliably. These risks include:

- Deterioration of gas facilities/assets
 - severe reduction in useful service life
 - leaks – safety hazards and increased green-house gas emissions
 - unplanned maintenance and repairs
 - operator work around to continue system operations
- Potential loss or danger to customers and public

Furthermore, this alternative is quickly outweighed by increased maintenance, operating and replacement costs. Additionally, these projects are designed to maintain compliance with federal and state rules and regulations regarding the safe and reliable operation of LNG facilities. Operator noncompliance could result in punitive penalties and forced removal from service as directed by federal and state regulators. Short term cost savings of "do nothing" is quickly outweighed by increased maintenance, operating and replacement costs.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to \$0.168M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



Short Form Sanction Paper

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRLC406 / CRLC506	NA	LNG - Cumberland LNG / LNG - Cumberland (Process Safety)	0.130
CRLC407 / CRLC507	NA	LNG - Exeter LNG / LNG - Exeter (Process Safety)	0.670
CRLC423 / CRLC523/	NA	LNG - Middletown LNG / LNG - Middletown (Process Safety)	0.000
Total			0.800

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	CFR 193 – Code of Federal Regulations CMR 220 – Code of Massachusetts Regulations NFPA 59A – Standard for the Production, Storage, and Handling of Liquefied Natural Gas
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

3.5 Asset Management Risk Score

Asset Management Risk Score: 41

Primary Risk Score Driver: (Policy Driven Projects Only)



Short Form Sanction Paper

Reliability Environment Health & Safety Not Policy Driven

3.6 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Project Closure Paper

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17 – FY21 Capital Plan - Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

4.1.1 If cost > approved Business Plan how will this be funded?

N/A

4.2 CIAC / Reimbursement

N/A



Short Form Sanction Paper

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2016/17	2017/18	2018/19	2019/20	2020/21	2021/22		
CRLC406 / CRLC506	LNG - Cumberland LNG / LNG - Cumberland (Process Safety)	+/- 10%	CapEx	0.000	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.130
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.130
CRLC407 / CRLC507	LNG - Exeter LNG / LNG - Exeter (Process Safety)	+/- 10%	CapEx	0.000	0.670	0.000	0.000	0.000	0.000	0.000	0.000	0.670
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	0.670	0.000	0.000	0.000	0.000	0.000	0.000	0.670
CRLC423 / CRLC523	LNG - Middletown LNG / LNG - Middletown (Process Safety)	+/- 10%	CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total Project Sanction			CapEx	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.800	
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
			Total	0.000	0.800	0.000	0.000	0.000	0.000	0.000		

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CapEx	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.800
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.800

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
USSC Approval	March 2016
Construction Start	April 2016



Short Form Sanction Paper

Milestone	Target Date: (Month/Year)
Construction Complete	March 2017
Project Closure Paper	June 2017

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
LNG	Su, Fikret	Endorses scope, design, conformance with design standards
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith and Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G
Procurement	Curran, Art
Control Center	Eagan, Mark J

6.1.3 List References

N/A

Short Form Sanction Paper



7 Decisions

I:
(a) APPROVE this paper and the investment of \$0.800M and a tolerance of +/-10%
(b) NOTE that K'Chebe Grace the Project Manager and has the approved financial delegation.
(c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket projects are approved by USSC and/or other appropriate authority for approval.
Signature <u>R. Turrini</u> Date <u>4/5/2015</u>
Executive Sponsor – Ross Turrini, SVP Gas Process and Engineering



Short Form Sanction Paper

8 Other Appendices

Project List
LNG CU - Install ladders for safe access to Vaporizer Relief Valves
LNG CU - Install Boiler Stack Caps
LNG CU - Upgrade Fire Alarm System
LNG EX - Vibration Monitoring - LNG Pumps
LNG EX - SCADA Upgrade
LNG EX - Upgrade SCADA (for consistency consider Wonderware)
LNG EX - PLC / Control Board Design and Upgrades - Construction



Spending Review Closure

Title:	FY17 LNG Reliability Blanket — Narragansett Gas	Sanction Paper #:	USSC-16-159C
Project #:	CRLC406, CRLC407, and C031973	Sanction Type:	Spending Review
Operating Company:	The Narragansett Electric Co.	Date of Request:	8/22/2017
Author:	Melissa Harris	Sponsor:	John Stavrakas VP Gas Asset Management
Utility Service:	Gas	Project Manager:	Thomas Wiese

1 Executive Summary

This paper is presented to close CRLC406, CRLC407, and C031973. The total spend was \$0.414M. The sanctioned amount for this project was \$0.800M at +/- 10% project grade.

The final spend amount is \$0.414M broken down into:

- \$0.380M Capex*
- \$0.000M Opex*
- \$0.034M Removal*

2 Project Summary

The capital work completed under this program included such activities such as:

- Upgrades and improvements to equipment e.g., compressors, tanks and auxiliary plant systems.
- Upgrades and replacement of control systems
- Structural Improvements
- Operational efficiency improvement
- Upgrades to equipment for process safety improvements



Spending Review Closure

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C031973	Portability/Westerly Satellite Vap.	Capex	(0.035)
		Opex	0.000
		Removal	0.035
		Total	0.000
CRLC406	LNG - Cumberland Blanket	Capex	(0.028)
		Opex	0.000
		Removal	0.000
		Total	(0.028)
CRLC407	LNG - Exeter Blanket	Capex	0.443
		Opex	0.000
		Removal	(0.001)
		Total	0.442
Total		Capex	0.380
		Opex	0.000
		Removal	0.034
		Total	0.414

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	0.800
		Opex	0.000
		Removal	0.000
		Total Cost	0.800
Sanction Variance (\$M)			Total Spend
		Capex	0.380
		Opex	0.000
		Removal	0.034
		Total Variance	0.386



Spending Review Closure

3.2 Analysis

The FY17 LNG Reliability Blanket for Narragansett Gas underspent the sanction amount by 48%. The underspend was due in large part to project deferrals. Several projects were deferred due to the decommissioning of the LNG tank at the Cumberland facility.

4 Improvements / Lessons Learned/ Root Cause

LNG Asset Management is working more closely with LNG Operations, Resource Planning and Project Management in order to improve the process and track the monies spent to improve projected forecasts. There are monthly Zero Variance and Portfolio Calibration Meetings to review the spend forecast for the fiscal year and align within the budget.

5 Closeout Activities

The following closeout activities have been completed.

Activity	
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) The same funding projects are used annually. They will remain open until LNG Asset Management and/or Resource Planning have determined the funding project is no longer needed.
- (2) Design and construction have not yet been completed for all the projects under this blanket program.
- (3) Refer to Section 4 Improvements / Lessons Learned / Root Cause



Spending Review Closure

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick, Quan, Philip	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathan	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph "JT"	Endorses Resources, cost estimate, schedule
LNG	Su, Fikret	Endorses scope, design, conformance with design standards
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Collison, Mark
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loicono, Paul

Spending Review Closure



7 Decisions

I approve this paper.

Signature..........Date...10/5/2017...

Executive Sponsor – Ross Turrini
Senior Vice President, Gas Process & Engineering and Chief Gas Engineer



Spending Review Closure

8 Appendix A

Sanction Paper Number	Original Approved Amount	Re-sanction Approved Amount	FP Proj No	FP Proj Description	Actuals			
					CAPEX	Removal	OPEX	Total
USSC-16-159	\$800,000	\$0	CG31973	Portability/Westerly Satellite Vap.	(\$34,708)	\$34,708	\$0	\$0
			CRLC406	LNG - Cumberland LNG	(\$26,475)		\$0	(\$26,475)
			CRLC407	LNG - Exeter LNG	\$442,800	(\$43)	\$0	\$442,758
USSC-16-159 Total					\$378,617	\$34,666	\$0	\$414,283

*Work Orders op at time of audit, March 2017



Resanction Request

Title:	FY17 Pressure Regulating Facilities – RI	Sanction Paper #:	USSC-16-134 v2
Project #:	CRIC402, CON0038	Sanction Type:	Resanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	January 10, 2017
Author:	Anthony DellaCamera	Sponsor:	John S. Stavrakas – Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Bill Mycroft

1 Executive Summary

This paper requests the resanction of CRIC402, CON0038 in the amount \$2.359M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$2.359M broken down into:

- \$2.313M Capex*
- \$0.000M Opex*
- \$0.046M Removal*

Note the originally requested sanction amount of \$1.050M

2 Resanction Details

2.1 Project Summary

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 facilities in the Rhode Island service territory. The Pressure Regulating Facilities Program focuses on capital upgrades/improvements and replacement installations of pressure regulating stations.



Resanction Request

2.2 Summary of Projects

Project Number	Project Type (Elect only)	Project Title	Estimate Amount (\$M)
CRIC402	Project type	FY17 Pressure Regulating Facilities - RI Re-Sanction	2.364
CON0038	Project type	RI-GAS-REGL STAT REPL-RI BLANKET	(0.005)
Total			2.359

2.3 Prior Sanctioning History

Previously approved sanctions are attached and listed below (Newest to Oldest).

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type	Paper Reference Number	Tolerance
3/29/16	USSC	\$1.050M	FY17 Pressure Regulating Facilities - RI	Sanction	USSC-16-134	+/-10%

Over / Under Expenditure Analysis

Summary Analysis (\$M)	Capex	Opex	Removal	Total
Resanction Amount	2.313	0.000	0.046	2.359
Latest Approval	1.004	0.000	0.046	1.050
Change*	1.309	0.000	0.000	1.309

*Change = (Re-sanction – Amount Latest Approval)



Resanction Request

2.4 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
CRIC402	FY17 Pressure Regulating Facilities - RI Re-Sanction	+/- 10%	CapEx	0.000	2.318	0.000	0.000	0.000	0.000	0.000	0.000	2.318
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
			Total	0.000	2.364	0.000	0.000	0.000	0.000	0.000	0.000	2.364
CON0038	RI-GAS-REGL STAT REPL-RI BLANKET	+/- 10%	CapEx	0.000	(0.005)	0.000	0.000	0.000	0.000	0.000	0.000	(0.005)
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	(0.005)	0.000	0.000	0.000	0.000	0.000	0.000	(0.005)
Total Project Sanction			CapEx	0.000	2.313	0.000	0.000	0.000	0.000	0.000	2.313	
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Removal	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046	
			Total	0.000	2.359	0.000	0.000	0.000	0.000	0.000	2.359	

2.5 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY17-FY21 Capital Plan – Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> N/A	\$0.859M

2.6 Drivers

2.6.1 Detailed Analysis Table

The following table indicates the major key variations that account for the difference between the original sanction amount and the requested resanction amount.

Detail Analysis (M's)	Over/Under Expenditure?	Amount
Key variation 1 – Contractor Costs	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	N/A
Key variation 2 – Hydrotesting Costs	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	N/A
Key variation 3 -- Design changes	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	N/A



Resanction Request

2.6.2 Explanation of Key Variations

The change in the overall project cost is due to increased contractor costs, hydrostatic pressure testing costs, and increased material and labor costs due to field scope changes.

Contractor costs came in significantly higher than what was budgeted for in the original estimate. The contractor awarded this work billed National Grid using time and materials rather than contract units.

Additionally, the original estimate for the Bentley St project included a pneumatic pressure test. The required minimum setback distance for a pneumatic pressure test could not be met, so a hydrostatic pressure test was performed. Compared to a pneumatic pressure test, a hydrostatic pressure test is much safer, but also results in higher material, labor, and removal costs. A contractor had to be brought in to perform the test.

Lastly, field scope changes resulted in higher material costs. For the Bentley Street project, the location of the regulator pit in the original design had to be changed. The new location of the pit required additional piping work that was not included in the original estimate.

These changes, when combined with time and materials billing, drove the contractor costs on the Bentley Street Project over \$1.000M.

To avoid repetition of project overruns similar to the Bentley St regulator replacement, the Complex Construction Process Working Group is evaluating opportunities to better manage complex projects and control their costs.

2.7 If cost is not aligned with approved Business Plan how will this be funded?

Re-allocation of funds within the portfolio has been managed and approved by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

2.8 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction	March 2016
Begin Construction	April 2016



Resanction Request

Construction Complete	January 2017
Resanction	January 2017
Project Close Out	June 2017

2.9 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Program Closure

3 Statements of Support

3.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Falls, Jonathan	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph "JT"	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

3.2 Reviewers

The reviewers have provided feedback on the content/language of the paper

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

Resanction Request



4 Decisions

l:

(a) APPROVE this paper and the investment of \$2.359M and a tolerance of +/-10%

(b) NOTE that Bill Mycroft is the Project Manager and has the approved financial delegation.

Signature Ross Turrini Date 1/24/2017

Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering and
Group Chief Engineer – Gas

Spending Review Closure



Title:	FY17 Pressure Regulating Facilities Program – RI	Sanction Paper #:	USSC-16-134 V2C
Project #:	CRIC402, C070527, C077449, CON0038	Sanction Type:	Spending Review - Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	7/18/2017
Author:	Stephen Soroka	Sponsor:	John Stavrakas – Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Bill Mycroft

1 Executive Summary

This paper is presented to close CRIC402, C070527, C077449, and CON0038. The total spend was \$2.283M. The original sanctioned amount for this project was \$1.050M with a tolerance of +/- 10% (project grade).

NOTE: The latest sanction amount for this project was \$2.359M.

The final spend amount of \$2.283M is broken down into:

- \$2.275M Capex
- \$0.000M Opex
- \$0.008M Removal

2 Project Summary

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 pressure regulating facilities in the Rhode Island service territory. The Proactive Regulator Program focuses on capital upgrades/improvements and new installations of pressure regulating stations.

Spending Review Closure



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRIC402	PRES REG FACIL - PROACTIVE - RI	Capex	2.238
		Opex	0.000
		Removal	0.008
		Total	2.246
C070527	RI OIL MITIGATION MEASURES	Capex	0.038
		Opex	0.000
		Removal	0.000
		Total	0.038
C077449	PVD - ADMIRAL @ CHARLES - REPLREG - RIS087	Capex	0.004
		Opex	0.000
		Removal	0.000
		Total	0.004
CON0038	RI - GAS - REGLTR STAT REPL - RI BLANKET	Capex	(0.005)
		Opex	0.000
		Removal	0.000
		Total	(0.005)
Total		Capex	2.275
		Opex	0.000
		Removal	0.008
		Total	2.283

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.050
		Opex	0.000
		Removal	0.000
		Total Cost	1.050
Sanction Variance (\$M)			Total Spend
		Capex	(1.224)
		Opex	0.000
		Removal	(0.008)
		Total Variance	(1.232)

Spending Review Closure



3.2 Analysis

The RI Proactive Pressure Regulating Facilities overspent its original sanction amount by 117%. The overspend was due to project cost overruns and inaccurate project estimates. The actual spend for several projects came in higher than the estimated cost. Additionally, major field scope changes led to some projects significantly overrunning their allotted estimate. However, the actual total spend for this program was less than the most recent sanctioned amount.

4 Improvements / Lessons Learned

Pressure Regulation Engineering is working more closely with Resource Planning and Project Management among other groups to track the money being spent and to improve project forecasts. Committees and meetings have also been set up to proactively manage the entire capital budget. There are monthly Zero Variance and Portfolio Calibration Meetings to review the spend forecast for the fiscal year and adjust it to align with the budget.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

Spending Review Closure



- (1) The same funding for this project is used annually. It will remain open until Pressure Regulation Engineering and/or Resource Planning have determined the funding for this project is no longer needed.
- (2) Design and construction have not yet been completed for all the projects under this program.
- (3) All lessons learned have been entered appropriately into the lesson learned database - Refer to Section 4 (Improvements/ Lessons Learned/ Root Cause)



Spending Review Closure

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M Quan, Philip	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Falls, Jonathan	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Fortier, Joseph "JT"	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Midkiff, Felicia
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

Spending Review Closure



7 Decisions

I approve this paper.

Signature..........Date.....

Executive Sponsor – Ross Turrini
Senior Vice President, Gas Process & Engineering and Chief Gas Engineer



Short Form Sanction Paper

Title:	FY17 System Automation Program – RI	Sanction Paper #:	USSC-16-073
Project #:	CRGC403	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	February 23, 2016
Author:	Alexander Day	Sponsor:	John Stavrakas – Acting Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Stephen Greco

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRGC403 in the amount of \$1.000M with a tolerance of +/- 10% for the purpose of full implementation.

This sanction amount is \$1.000M broken down into:

- \$1.000M Capex*
- \$0.000M Opex*
- \$0.000M Removal*

1.2 Project Summary

The primary purpose of this program is to increase the level of system automation by monitoring and controlling gas pressure, temperature and flow rate at gas regulator stations.

2 Project Detail

2.1 Background

The company objective at take stations and regulator stations is to standardize operations, maintain custody check metering, and increase control and monitoring. This program is policy driven and will increase the overall reliability and integrity of the gas system. Program delivery also serves to increase operational understanding of the system to identify abnormal operating conditions and to facilitate a proactive approach to alarm management. It improves our employees' ability to operate and maintain the



Short Form Sanction Paper

system by allowing Gas Control and Field Operations to respond to the system operation conditions as they occur.

2.2 Drivers

The system automation program supports the Pipeline and Hazardous Materials Safety Administration (PHMSA) requirement that “each operator must provide its controllers with the information, tools, processes and procedures necessary for the controllers to carry out the roles and responsibilities the operator has defined.”

2.3 Project Description

This project will install Remote Terminal Units (RTU's) at multiple pressure regulator stations located throughout the Narragansett Electric Company service territory. RTU's are installed locally at the pressure regulating facilities and transmit temperature, pressure, and flow data via cellular or lease-line technology back to the Gas Control Room. In some cases the RTU's can also monitor other sensors such as gas detectors, and intrusion alarms. In addition, controllers are strategically installed on the regulator runs of some stations in order to provide the Gas Control Room with remote operating capabilities. The budget for FY17 was built based on the budget and spend on this program in FY16.

2.4 Benefits

Data provided by the RTU's will allow Gas Control to respond to current system operating conditions, efficiently alert field personnel when required and remotely adjust the pressure set point at the regulator stations when necessary.

2.5 Business & Customer Issues

Installing automation equipment allows gas control to monitor system performance proactively and address issues before they impact customers.

2.6 Alternatives

Alternative 1: Defer Project

Deferring the project does not meet the long term company objective to actively manage system pressures and leak activity. Also this alternative will leave approximately 50% of this region without remote monitoring and control. Not having the capability to monitor system pressure in real time increases risk to the gas system and our customers.



Short Form Sanction Paper

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.210. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRGC403	N/A	FY17 System Automation Program - RI	1.000
Total			1.000

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	National Grid Policy PL 030002 – SCADA Instrument & Control requires that new telemetry points are approved by Gas Control in accordance with the U.S. Department of Transportation - Pipeline and Hazardous Materials Safety Administration (PHMSA) Control Room Management standards (49CFR 192.631).



Short Form Sanction Paper

3.5 Asset Management Risk Score

Asset Management Risk Score: 40

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

3.6 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Project Closeout

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17–FY21 Capital Plan – Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

4.1.1 If cost > approved Business Plan how will this be funded?

N/A – Consistent with planned amount.



Short Form Sanction Paper

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
CRGC403	FY17 System Automation Program - RI	+/- 10%	CapEx	-	1.000	-	-	-	-	-	-	1.000
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	1.000	-	-	-	-	-	-	-
Total Project Sanction			CapEx	-	1.000	-	-	-	-	-	-	1.000
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	1.000	-	-	-	-	-	-	1.000

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Short Form Sanction Paper

5 Key Milestones

Milestone	Target Date: Month/Year
Sanction Approval	February 2016
Final Engineering Complete	March 2016
Start Applying for Permits	April 2016
Engage Required Resources	April 2016
Construction Start Date	May 2016
Construction Complete	February 2017
Commissioning	March 2017
Project Closure Sanction	June 2017

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Michel, Michael	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith
	Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

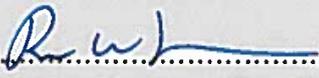
Short Form Sanction Paper



7 Decisions

I:

- (a) APPROVE this paper and the investment of \$1.000M and a tolerance of +/-10%
- (b) NOTE that Stephen Greco is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket/Program projects are not approved prior to the start of the FY18 fiscal year, the FY17 approval limits will remain in effect until such time as the FY18 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature  Date 3/1/2016
Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering

Short Form Sanction Paper



8 Other Appendices

8.1 Sanction Request Breakdown by Project
N/A

Spending Review Closure



Title:	FY17 System Automation Program – RI	Sanction Paper #:	USSC-16-073C
Project #:	C039264, CRGC403	Sanction Type:	Spending Review - Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	7/18/17
Author:	Stephen Soroka	Sponsor:	John S. Stavrakas – Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Stephen Greco

1 Executive Summary

This paper is presented to close C039264 and CRGC403. The total spend was \$0.728M The latest sanctioned amount for this project was \$1.000M with a tolerance of +/- 10% (project grade).

The final spend amount of \$0.728M is broken down into:

- \$0.728M Capex*
- \$0.000M Opex*
- \$0.000M Removal*

2 Project Summary

The primary purpose of this program is to increase the level of system automation by monitoring and controlling gas pressure, temperature and flow rate at gas regulator stations.



Spending Review Closure

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRGC403	SYSTEM AUTOMATION - RI	Capex	(0.012)
		Opex	0.000
		Removal	0.000
		Total	(0.012)
C039264	SYSTEM AUTOMATION	Capex	0.740
		Opex	0.000
		Removal	0.000
		Total	0.740
Total		Capex	0.728
		Opex	0.000
		Removal	0.000
		Total	0.728

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.000
		Opex	0.000
		Removal	0.000
		Total Cost	1.000
Sanction Variance (\$M)			Total Spend
		Capex	0.272
		Opex	0.000
		Removal	0.000
		Total Variance	0.272



Spending Review Closure

3.2 Analysis

The total annual spend for the System Automation and Control Program in the RI territory was 27% lower than the sanctioned amount. Resource limitations led to the deferral of some projects to FY18. Additionally, several project estimates were higher than the actual spend, resulting in underspend.

4 Improvements / Lessons Learned

The Company has identified the need to increase the number of available resources for this program and to start work earlier in the year. Starting work earlier in the fiscal year, where possible, would help with getting more work completed. Additionally, the estimating tools are being improved upon to provide a more accurate forecast and to mitigate overspending on individual projects. Lastly, Pressure Regulation Engineering is currently working with Instrumentation and Regulation to improve the permitting process to prevent project deferrals as a result of permitting issues.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

Spending Review Closure



- (1) The same funding project is used annually. It will remain open until Pressure Regulation Engineering and/or Resource Planning have determined the funding for this program is no longer needed.
- (2) Design and construction have not yet been completed for all of the open projects under this program.
- (3) All lessons learned have been entered appropriately into the lesson learned database. – Refer to Section 4 (Improvements/Lessons Learned/Root Cause)



Spending Review Closure

6 Statements of Support

6.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M Quan, Phillip	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Falls, Jonathan	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Fortier, Joseph "JT"	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Midkiff, Felicia
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

Spending Review Closure



7 Decisions

I approve this paper.

Signature..... *Ross Turrini*Date..... *7/26/17*

Executive Sponsor – Ross Turrini
Senior Vice President, Gas Process & Engineering and Chief Gas Engineer



US Sanction Paper

Title:	Allens Av Regulator Station Rebuild	Sanction Paper #:	USSC-15-112v2
Project #:	C056104 & C070527	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	8/10/2016
Author:	Kenneth Harber	Sponsor:	John Stavrakas Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Kenneth Harber

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of C056104 and C070527 in the amount \$4.940M with a tolerance of +/-10% for the purposes of partial installation of phase one of the Allens Av Regulator Station Rebuild project and installation of the Allens Av filter/separator.

This sanction amount is \$4.940M broken down into:
\$ 4.940M Capex
\$ 0.000M Opex
\$ 0.000M Removal

NOTE the potential investment of \$10.575M with a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering/design for the last two phases of the project.

1.2 Project Summary

As a part of the effort by the RI jurisdiction to remove deteriorating buildings as well as clean the contaminated soil within the Allens Av property, the gas mains and regulator stations throughout the property will be consolidated and made safer and more reliable. For the first phase of the project, there are four (4) regulator stations that feed the 99 psig system currently, which will be consolidated and relocated on the property to 3 regulator runs with common inlet and outlet headers in one building. This will also eliminate interconnects between pressure systems that can not be cut out given the current configuration and the separate station feed to NG-LNG. A new filter/separator will be installed on the 200psig pipeline to protect the regulator stations and downstream distribution system from pipeline contaminants and liquids. The second phase of the project will replace the three (3) lower pressure regulator stations on the property and move them into the distribution system, along with associated main



US Sanction Paper

reinforcements, to provide better pressure support to the gas system in Providence and eliminate leak-prone pipe. The final phase of the project will abandon the remaining gas mains and regulator stations once the new system configuration has been tested, and will include final clean-up of the surrounding property.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C056104	N/A	Allens Av Regulator Station Rebuild	9.445
C070527	N/A	Allen Av Filter/Separator	1.130
Total			10.575

1.4 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C049332	Liquefaction Project at Providence, RI LNG Plant	186.327
Total		186.327

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
8/1/2014	DOA	\$0.800M (for engineering and materials purchase)	\$5.200M	N/A	DOA	+/- 10%
4/21/2015	USSC	\$3.600M	\$5.500M	Allens Av Regulator Station Rebuild	Partial	+/- 10%

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
February 2017	Partial Sanction (Phase 1 Remainder)



US Sanction Paper

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	National Grid Document ENG01001 – “Design of Gas Regulator Stations – Part 1”
<input checked="" type="radio"/> Policy- Driven	National Grid Document ENG01002 – “Design of Gas Regulator Stations – Part 2”
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

1.8 Asset Management Risk Score

Asset Management Risk Score: 35

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 22

1.10 Process Hazard Assessment

A Process Hazard Assessment (PHA) is required for this project:

- Yes
 No



US Sanction Paper

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-FY21 Capital Plan – Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$5.425M

1.12 If cost is not aligned with approved Business Plan how will this be funded?

Re-allocation of funds within the portfolio will be managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

	Prior Yrs	Current Planning Horizon						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
\$M								
CapEx	1.200	3.740	2.970	2.365	0.050	0.000	0.000	10.325
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.200	3.740	2.970	2.365	0.300	0.000	0.000	10.575

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Initial Sanction (PowerPlan for Engineering)	October 2014
Partial Sanction (Phase 1 Original Scope)	April 2015
Partial Sanction (Phase 1 Initial Portion)	August 2016
Installation of Foundations & Pre-fab Buildings	August 2016
Installation of Filter/Separator	October 2016
Installation of Piping inside of Adjacent Laydown Area	November 2016
Partial Sanction (Phase 1 Remainder)	February 2017
Full Sanction (Phases 2 and 3)	February 2018
Project Closure	April 2020



US Sanction Paper

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green

1.16 Key Issues (include mitigation of Red or Amber Resources)

1	Coordination of work with ongoing LNG Liquefier project / Kiewit controlled area
2	Environmental concerns working in former MGP site

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

N/A

US Sanction Paper



2 Decisions

The US Sanctioning Committee (USSC) at a meeting held on 8/10/2016:

(a) APPROVED the investment of \$4.940M and a tolerance of +/-10% for partial installation of phase one of the Allens Av Regulator Station Rebuild project and installation of the Allens Av filter/separator.

(b) NOTED the potential investment of \$10.575M and a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

(c) NOTED that Kenneth Harber has the approved financial delegation to undertake the activities stated in (a).

Signature Ross Turrini Date 8/17/2016

Ross Turrini
Senior Vice President, US Sanctioning Committee Co-Chair Person



US Sanction Paper

3 Sanction Paper Detail

Title:	Allens Av Regulator Station Rebuild	Sanction Paper #:	USSC-15-112v2
Project #:	C056104 & C070527	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	8/10/2016
Author:	Kenneth Harber	Sponsor:	John Stavrakas Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Kenneth Harber

3.1 Background

The primary location of this project will be at the company-owned facility at 642 Allens Avenue, Providence RI. Phase one will be entirely located on the property. Phase two of the project will be in three (3) areas of the city of Providence. Phase three will also take place at the Allens Avenue property for final clean-up.

There are historically concerns with the configuration of these regulator stations and how the systems are connected and fed in this part of the Rhode Island distribution system. This project will simplify how the regulator stations work, making it safer for the technicians who will maintain these facilities in the future. These regulator stations are significant feeds into the Providence, Johnston, Cranston, Warwick, East Greenwich, and North Kingstown areas. Therefore, for the company's to be able to maintain continued reliability for customers in the region, these regulator stations need to be upgraded to function in a safe and reliable manner.

This project is important for the safety of the public in the nearby distribution area through the reduction of the potential for overpressurization of the system by the inclusion of additional overpressure protection devices. Also, by relocating the three (3) lower pressure regulator stations, National Grid can abandon some large sections of leak-prone pipe and eliminate the related potential for gas leaks. The project also provides greater reliability to the CNG station on the company property. Lastly, this project is one part of the larger effort to improve the appearance of the company property for the neighbors.



US Sanction Paper

3.2 Drivers

The key driver for the regulator station rebuild project is to remove old regulator station buildings and above-grade piping in the central portion of the 642 Allens Avenue, Providence, RI property. This supports the effort across the entire property to demolish several old buildings no longer in use, and their associated piping.

In addition, the Company has also agreed to replace sections of 200 psig main and other transmission-grade facilities throughout the RI distribution system, which do not have sufficient records. Some sections connected to the existing regulator stations meet this replacement criterion.

3.3 Project Description

To improve the safety and reliability of the Allens Av gas regulator stations, the Company has proposed to:

- Consolidate the existing four (4) regulator stations fed from the 200 psig main into one new building. The replacement of these stations offers an opportunity to add a third layer of overpressure protection to reduce the risk of overpressurization. The new building will also be storm-hardened by establishing it on higher ground. The existing grade of the property is within the 100yr flood zone.
- Install a new filter/separator to protect the downstream distribution system from pipeline contaminants and liquids.
- Move the three (3) regulator stations fed from the 99psig mains further into the distribution system, which provides better pressure support and allows elimination of several thousand feet of leak-prone cast iron main.
- Cut off the piping interconnects and coordinate with Environmental to safely and properly address the contaminated portions of the yard around the existing regulator stations.
- Tie the tail-gas line from the Liquefaction project into the distribution system so that tail gas can mix properly with street gas and feed the required quality of gas to the CNG station at the edge of the property and the distribution system beyond.

3.4 Benefits Summary

Moving the four (4) 200psig to 99psig regulator stations from the current location to a more southern location near the NG-LNG property allows better support for the liquefaction project to tie into the mains in such a way to create a better mix of liquefaction tail gas and street gas for the sake of the neighboring CNG station. In addition this will also allow for the elimination of the separate station that feeds NG-LNG.



US Sanction Paper

To support both Long Term Planning and Main and Service Replacement, the three (3) lower pressure regulator stations fed from the 99psig system will be moved off of the Allens Av property further into the distribution system. This will provide better pressure support to Providence as well as facilitate the replacement of several thousand feet of leak-prone cast iron pipe.

Lastly, the company has a practice to remove interconnects between different pressure systems for public and employee safety. Some of these valved interconnects exist in the current piping configuration and cannot be removed because there is not enough space to do the work while maintaining a feed to the distribution system. These interconnects will be removed when the gas mains feeding the old regulator stations are cut and capped.

3.5 Business and Customer Issues

There are no significant business issues beyond what has been described elsewhere.

3.6 Alternatives

Alternative 1: 200psig Fed Stations Only

This alternative is less expensive than the proposed project, as the three (3) newer lower pressure regulator stations would remain in place. However, on the property, approximately the same amount of piping work would be required regardless of whether we replace all seven (7) regulator stations or only four (4). Also, the cut and caps would not eliminate the older transmission pressure pipelines as cleanly. Additionally, if the stations feeding the 35psig, 10psig, and 7psig systems are not relocated further into the distribution system, several thousand feet of leak-prone pipe could not be abandoned.

Alternative 2: Leave As Is

This option is not recommended as the company continues to assume the risk associated with system interconnects, and it does not address the insufficient records identified in the inquiry by the PUC, nor does it address the waning condition of existing equipment.

3.7 Safety, Environmental and Project Planning Issues

A Health and Safety Plan will be developed and all National Grid Safety and Environmental Rules will be followed.

US Sanction Paper



3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	Unknown subsurface conditions may impact ultimate location of gas main piping	3	3	2	9	6	Mitigate	Conduct survey investigation of proposed area of work	Unknown subsurface conditions remain	Utilize survey information to reroute gas main as needed
2	Coordination with liquefaction project schedule	2	2	5	4	10	Mitigate	Biweekly project coordination meetings	Residual Conflicts Exist	Prioritize work between projects
3	Presence of contaminated soil in excavation	4	2	2	8	8	Mitigate	Detailed environmental contingency plan in place	Environmental contaminants found in excavation	Enact contingency plan and take corrective environmental actions

3.9 Permitting

Permit Name	Probability Required (Certain/ Likely/ Unlikely)	Duration To Acquire Permit	Status (Complete/ In Progress Not Applied For)	Estimated Completion Date
Conditional Building Permit	Certain	2-3 months	Complete	Jan 2016
Full Building Permit	Certain	2-3 months	Not Applied For	Dec 2016

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Investment recovery will be through standard rate recovery mechanisms approved by appropriate regulatory agencies.



US Sanction Paper

3.10.2 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$2.163M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3.10.3 CIAC / Reimbursement

N/A

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
C056104	Allens Av Regulator Station Rebuild	+/-10%	CapEx	1.200	2.610	2.970	2.365	0.050	0.000	0.000	9.195
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
			Total	1.200	2.610	2.970	2.365	0.300	0.000	0.000	9.445
C070527	Allens Av Filter/Separator	+/-10%	CapEx	0.000	1.130	0.000	0.000	0.000	0.000	0.000	1.130
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	1.130	0.000	0.000	0.000	0.000	0.000	1.130
Total Project Sanction			CapEx	1.200	3.740	2.970	2.365	0.050	0.000	0.000	10.325
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
			Total	1.200	3.740	2.970	2.365	0.300	0.000	0.000	10.575

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	1.200	1.750	1.350	0.850	0.000	0.000	0.000	5.150
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	1.200	1.750	1.350	0.850	0.000	0.000	0.000	5.150

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	(1.990)	(1.620)	(1.515)	(0.050)	0.000	0.000	(5.175)
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	(0.250)	0.000	0.000	(0.250)
Total Cost in Bus. Plan	0.000	(1.990)	(1.620)	(1.515)	(0.300)	0.000	0.000	(5.425)



US Sanction Paper

3.11.3 Cost Assumptions

The estimates were developed using internal estimating tools by Gas Systems Engineering in 2016 and through the solicitation of contractor bids by Procurement. The accuracy level of the estimate for each project is identified in table 3.11.1.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

This is not an NPV Project.

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-Year Business Plan or Emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost, estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Project Estimate



US Sanction Paper

3.12.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

4 Appendices

4.1 Sanction Request Breakdown by Project

\$M	C056104	C070527	Total
CapEx	3.810	1.130	4.940
OpEx			0.000
Removal			0.000
Total	3.810	1.130	4.940

4.2 Other Appendices

N/A



Short Form Sanction Paper

Title:	Dey St – Regulator Rebuild	Sanction Paper #:	USSC-17-264
Project #:	C074675	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	6/27/2017
Author:	Stephen Soroka	Sponsor:	John S. Stavrakas, Vice President – Gas Asset Management
Utility Service:	Gas	Project Manager:	William Foley

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of C074675 in the amount \$1.747M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$1.747M broken down into:

- \$1.660M Capex*
- \$0.000M Opex*
- \$0.087M Removal*

1.2 Project Summary

Pressure regulation at 27 Dey St, East Providence RI is currently owned and operated by both National Grid and Spectra Energy. In 2016, Spectra Energy’s regulators failed, causing intermediate piping from their devices to National Grid’s regulators to over pressurize. Spectra Energy’s regulators failed to “lock-up” during station maintenance, which allowed gas pressure to build in this intermediate piping section. As a result of these problems, National Grid is rebuilding the Dey St facility to incorporate overpressure protection in the form of 3 layers of protection with a fully redundant run.

2 Project Detail

2.1 Background

This project has been split into two phases, the first having occurred in FY17 and the second occurring in FY18. Phase 1 of this project began during FY17 and started with moving pressure regulation from the existing National Grid building into Spectra Energy’s meter building. Here, new primary and secondary runs were constructed, each with 3 layers of protection. The third device installed is a fire rated actuated ball valve



Short Form Sanction Paper

that has the ability to regulate. These pressure regulating devices are now responsible for cutting full inlet pressure of 750psig to 99psig. All new pressure regulating materials are class 600 rated and have been pressure tested for 8 hours at 1.5 times the maximum allowable operating pressure, "MAOP". In addition, a new 12 inch outlet header with two 2 inch sense lines was installed downstream of the regulating devices. This outlet header now has temperature and pressure taps for remote and local monitoring.

Phase 2 of the project will begin during FY18 and will focus on the installation of new outlet piping, an outlet valve, and a new outlet header, all of which will be made with 20 inch extra heavy wall pipe. The current layout of the Dey St station will also change. The outlet header and sense lines will be moved outside of the building and underground due to space limitations from installing the third ball valve regulator. An additional third sense line will also be added downstream of the outlet valve and brought back to the building for maintenance purposes.

2.2 Drivers

Key drivers are to repair failing asset condition and to increase reliability.

2.3 Project Description

2.4 Benefits

Rebuilding the Dey St facility to our latest standards will help to ensure continuous and reliable service to National Grid's customers in the Providence, RI area. This project will increase reliability by adding third layer devices to our pressure regulating assets.

2.5 Business & Customer Issues

There are no significant business issues beyond what has been described elsewhere in this paper

2.6 Alternatives

Alternative 1: Do Nothing/Defer Project

Doing nothing or deferring this project does not meet the Company's obligation to provide safe and reliable gas service to its customers and communities, nor the longer term objective of improving the operation and performance of the pressure regulating stations. The consequences of not completing the work as proposed will result in increased risks associated with the failure of station equipment, and/or the stations associated piping. Specifically, failure to complete the identified work would



Short Form Sanction Paper

reduce the integrity of the system and potentially result in significant customer outages.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.339M. This is indicative only. The actual revenue requirement may differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C074675	N/A	Dey St - Regulator Rebuild	1.747
Total			1.747

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
7/15/2016	PowerPlan Approval	0.950M	N/A	N/A	N/A.	+/- 10%



Short Form Sanction Paper

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	
<input checked="" type="radio"/> Policy- Driven	National Grid Document ENG01002 – “Design of Gas Regulator Stations ENG01002”
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

3.5 Asset Management Risk Score

Asset Management Risk Score: 30

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability Environment Health & Safety Not Policy Driven

3.6 Complexity Level

- High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 15

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2018	Closure Paper



Short Form Sanction Paper

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY18-FY22 Capital Plan – Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.897M

4.1.1 If cost > approved Business Plan how will this be funded?

Re-allocation of funds within the portfolio has been managed and approved by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
C074675	Dey St - Regulator Rebuild	Est Lvl (e.g. +/- 10%)	CapEx	0.732	0.928	0.000	0.000	0.000	0.000	0.000	0.000	1.660
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.039	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.087
			Total	0.771	0.976	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Project Sanction			CapEx	0.732	0.928	0.000	0.000	0.000	0.000	0.000	0.000	1.660
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.039	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.087
			Total	0.771	0.976	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Short Form Sanction Paper

4.4 Project Budget Summary Table

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
\$M								
CapEx	0.400	0.450	0.000	0.000	0.000	0.000	0.000	0.850
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.400	0.450	0.000	0.000	0.000	0.000	0.000	0.850

Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
\$M								
CapEx	(0.332)	(0.478)	0.000	0.000	0.000	0.000	0.000	(0.810)
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	(0.039)	(0.048)	0.000	0.000	0.000	0.000	0.000	(0.087)
Total Cost in Bus. Plan	(0.371)	0.450	0.000	0.000	0.000	0.000	0.000	(0.897)

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Approval	June 2017
Delivery of Materials	July 2017
Start Construction	July 2017
Complete Construction	December 2017
Project Closure	March 2018



Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Investment Planning</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Falls, Jonathan	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Easterly, Patricia
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

Short Form Sanction Paper



7 Decisions

I:

(a) APPROVE this paper and the investment of \$1.747M and a tolerance of +/-10%

(b) NOTE that Joseph T. Fortier, Jr is the Project Manager and has the approved financial delegation.

Signature.....  Date..... 7/19/12

Ross Turrini, Senior Vice President, Gas Process & Engineering and Chief Gas Engineer



Short Form Sanction Paper



8 Other Appendices

8.1 Sanction Request Breakdown by Project

N/A



Short Form Sanction Paper

Title:	Cumberland LNG Tank Decommissioning	Sanction Paper #:	USSC-16-288v2
Project #:	C076982	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	7/12/17
Author:	Rob Cimini / David Weimer	Sponsor:	John Stavrakas, VP Gas Asset Mgmt.
Utility Service:	Gas	Project Manager:	Rob Cimini / David Weimer

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of C076982 in the amount \$4.134M with a tolerance of +/-15% for the purposes of engineering, implementation of a portable pump system to interface with existing vaporizers to accept truck deliveries, de-inventory of the LNG Tank liquid, purging of the LNG tank, demolition of the air purged tank and assessment and procurement of the site restoration resources.

The specified tolerance of +/- 15% is being supported by a Level 3 estimate.

This sanction amount of \$4.134M is broken down into:

- \$1.126M Capex*
- \$0.000M Opex*
- \$3.008M Removal*

NOTE the potential investment of \$6.134M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of demolition of the tank, assessment of site restoration requirements and receipt of final bids for the established scope of restoration work.

1.2 Project Summary

This project will include all activities associated with configuring LNG piping at existing vaporizers to accept truck deliveries; emptying, purging and decommissioning the LNG tank in Cumberland, Rhode Island; and final disposition of the tank by demolition followed by site restoration. This multi-step decommissioning process will require detailed engineering, process safety considerations, and construction.



Short Form Sanction Paper

2 Project Detail

2.1 Background

The Cumberland LNG tank was designed and built by Preload Cryogenics in 1976. It is a low-pressure, pre-stressed concrete tank with a suspended stainless steel inner tank liner. The capacity of the tank is 23,450 barrels of LNG and is in an earthen dike. There have been multiple repairs to the concrete exterior of the tank over its years of service.

In the spring of 2016, plant personnel received foundation thermocouple alarms of very low temperatures, -66°F. The alarms were investigated and the readings were found to be correct. Extremely cold temperatures were somehow penetrating the tank foundation. National Grid has not yet determined the cause of the condition of the Cumberland LNG tank. It is currently premature to conclude a specific reason for the condition.

The Company concluded that attempting to repair the tank was not an acceptable risk due to the tank's age, the complexity of a repair and uncertainty about the nature and extent of the tank damage. National Grid has informed the Rhode Island Public Utilities Commission (RIPUC) and the Division of Public Utilities and Carriers (Division) that, out of an abundance of caution for safety reasons, the tank will be decommissioned and permanently removed from service. National Grid has also notified the Pipeline and Hazardous Materials Safety Administration (PHMSA) of this action.

2.2 Drivers

The driver for the project is safety. LNG tank owner/operators are required to ensure that the tank foundation maintains temperatures adequate (above freezing, typically controlled to 40F) to prevent frost heaves and avert any damage to the structure of the tank.

The foundation of the LNG tank has been exposed to cryogenic temperatures and the extent of any damage is unknown. Updates as of September 28, 2016 indicate that the cold spot temperature has decreased further but increased tank foundation heat has partially offset the temperature decrease. However, the temperature has remained below historical levels. This condition prompted the decision to take the tank out of service.

2.3 Project Description

The project is comprised of the following steps:

- Configuring LNG piping at existing vaporizers to accept truck deliveries. Implementation of portable pumping capabilities with LNG provided by tanker trucks using the existing plant vaporizers, removed the need for the



Short Form Sanction Paper

Cumberland LNG tank to provide the supply for the upcoming vaporization season. This was completed in FY17.

- Emptying the remaining liquid currently in the tank. This required a two-step process: (1) boiling off the portion of the liquid that may be utilized by customers on the distribution system, and (2) evacuating the remaining heavy hydrocarbons for disposal. This was completed in FY17.
- Purging the remaining gaseous vapor from the tank. This process was time consuming requiring the development of special warming and purging procedures due to the unique design of this storage tank. The open cell urethane insulation which separates the outer concrete tank from the liquid containing vessel has been absorbing methane gas for 40 years. This project included the development of procedures necessary to adequately purge this insulation of explosive gases in a safe manner. The tank manufacturer as well as LNG specialists were involved in this process. This was completed in FY17.
- Demolishing the LNG tank. The final step to remove the tank from service will include the disassembly and removal of the LNG storage tank and its associated auxiliaries, (pumps, piping, electric conduit, etc.) leaving the site in a safe and environmentally friendly state. Integral to this step will be an investigation of the condition of the tank interior in the area of the suspected damage and low foundation temperature readings. This will be accomplished without personnel entering the tank structure. This will be completed in FY18.
- Restoring the site: This phase is to address any environmental conditions required to be in compliance with regulatory and National Grid policies. This is projected for completion in FY19. Future gas supply requirements that may be established through Gas Supply Planning would be addressed as a separate project and is not part of the site restoration scope as intended in this project definition.

2.4 Benefits

Decommissioning the Cumberland LNG tank will eliminate safety and operational concerns related to possible tank damage.

2.5 Business & Customer Issues

The project is not expected to cause any disturbance to customers, abutters, or surrounding areas. No interruption in gas service is expected as a result of this project.

The Division is closely following the forensic investigation of the tank and has requested site presence during that portion of the demolition work.



Short Form Sanction Paper

2.6 Alternatives

Alternative 1: Repair LNG tank

Not recommended. A full repair of the LNG tank would require emptying and purging the tank. Emptying the LNG tank will add a full heating cycle to the tank. A heating cycle is when a tank is completely warmed and then cooled back down to cryogenic temperatures. This cycle may have adverse consequences related to the structural integrity of this particular LNG tank.

A repair will also require personnel to enter the empty LNG tank. There are many uncertainties surrounding how the Cumberland tank could be made safe for human entry. National Grid has chosen as a matter of safety policy to avoid these potential uncertainties and the associate risk..

Alternative 2: Leave tank in decommissioned state

Not recommended. This alternative would leave the site as-is with the tank fully decommissioned and air purged. This would require ongoing monitoring of the tank for any gaseous hydrocarbon buildup that may migrate from the insulation. Additionally, the extent of the tank damage is unclear and a detailed investigation is necessary to access the damage and report to the RI-PUC. This investigation will require demolition of the tank. Finally, the full decommissioning scope of this project has always included removing the tank once it is fully decommissioned.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms approved by appropriate regulatory agencies.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.245M. This is indicative only. The actual revenue requirement may differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



Short Form Sanction Paper

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C076982	Project Type	Cumberland LNG Tank Decommissioning	6.134
Total			6.134

3.2 Associated Projects

NA

3.3 Prior Sanctioning History

Describe previous sanctions for the projects included in the scope of this paper (Newest to Oldest).

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
10/24/16	USSC/SESC	\$2.360M	\$20.000M	Cumberland LNG Tank Decommissioning	Partial	+50/-25%

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
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Short Form Sanction Paper

<input type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input checked="" type="radio"/> Other	<p>This project is being done to address a potential safety concern with the LNG tank due to the emergence of a cold spot in the tank foundation through an unknown condition of the liner and insulation. A conservative safety approach has been established to remove the tank from service and ultimately remove (demolish) it.</p> <p>Loss of this capacity requiree provision for seasonal service of reliable gas to the Cumberland low pressure system through implementation of a portable pump system.</p>
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3.5 Asset Management Risk Score

Asset Management Risk Score: 48

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

3.6 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 21

3.7 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
4/2018	Full Sanction

4 Financial

4.1 Business Plan



Short Form Sanction Paper

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY18 – FY22 Capital Budget Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	1.789M

4.1.1 If cost is > approved Business Plan how will this be funded?

NA

4.2 CIAC / Reimbursement

NA

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
C076982	Cumberland LNG Tank Decommissioning	Est Lvl (e.g. +/- 15%)	CapEx	1.126	-	-	-	-	-	-	1.126
			OpEx	-	-	-	-	-	-	-	-
			Removal	1.208	1.800	2.000	-	-	-	-	5.008
			Total	2.334	1.800	2.000	-	-	-	-	6.134
Total Project Sanction			CapEx	1.126	-	-	-	-	-	-	1.126
			OpEx	-	-	-	-	-	-	-	-
			Removal	1.208	1.800	2.000	-	-	-	-	5.008
			Total	2.334	1.800	2.000	-	-	-	-	6.134

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	1.126	0.000	0.000	0.000	0.000	0.000	0.000	1.126
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	1.208	3.589	2.000	0.000	0.000	0.000	0.000	6.797
Total Cost in Bus. Plan	2.334	3.589	2.000	0.000	0.000	0.000	0.000	7.923



Short Form Sanction Paper

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2017/2018	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	1.789	0.000	0.000	0.000	0.000	0.000	1.789
Total Cost in Bus. Plan	0.000	1.789	0.000	0.000	0.000	0.000	0.000	1.789

5 Key Milestones

Milestone	Target Date: (Month/Year)
Partial Sanction (1 st)	10/2016
Partial Sanction (2 nd)	7/2017
Award Contract	7/2017
Contractor Mobilization	7/2017
Demolition Complete	9/2017
Scope of Site Restoration Established	1/2018
Project Sanction	4/2018
Project Complete	7/2018
Closure Paper	10/2018

6 Statements of Support

6.1.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathan	Endorses resources, cost estimate, schedule and portfolio alignment
Project Management	Fortier, Joseph	Endorses Resources, cost estimate, schedule
LNG	Sullivan, Kathleen	Endorses scope, design, conformance with design standards
Project Estimation	Paul, Art	Endorses Cost Estimate

Short Form Sanction Paper



6.1.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Easterly, Pat
Regulatory	Gurry, Renee
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Gas Control Center	Loiacono, Paul

6.1.3 List References

1	Cumberland LNG Tank Cold Spot Report
2	
3	

Short Form Sanction Paper



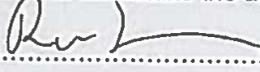
7 Decisions

I:

(a) APPROVE the investment of \$4.134M and a tolerance of +/- 15 % for the purposes of engineering, implementation of a portable pump system to interface with existing vaporizers to accept truck deliveries; de-inventory of the LNG Tank liquid; purging of the LNG tank; demolition of the air purged tank and assesment and procurement of the site restoration resources.

(b) NOTE the potential investment of \$6.134M and a tolerance of +/-10 %, is contingent upon demolition of the tank, assessment of site restoration requirements and receiving final bids for the established scope of restoration work.

(c) NOTE that David Weimer is the Project Manager and has the approved financial delegation to undertake the activities stated in (a).

Signature..........Date 6/23/07

Ross Turrini
Senior Vice President, Gas Process & Engineering and Chief Gas Engineer

8 Other Appendices

NA

8.1 Sanction Request Breakdown by Project

\$M	C076982	Total
CapEx	1.126	1.126
OpEx		0.000
Removal	3.008	3.008
Total	4.134	4.134

Funding Project Information		Details	
Description	Discretionary - Maintain RI	Funding Proj	CRFC501
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	5
Budget	CRFC501	Status	open
Department	78855360G - FieldOp-NE-F	FP ID	381857049
F. P. Type	P_Gas Distribution Construction RI		
Long Description	Discretionary - Maintain RI		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	0 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	PHILPD	Close Date	
Date Suspended		Date Initiated	9/11/2013
<div style="text-align: right;"> Audits Delete FP Cancel FP Suspend FP Estimates Update Print Close </div>			
<div style="text-align: center;"> Record 1 of 1 <div style="float: right;"> < < > > </div> </div>			

Funding Project Information

Title:
 Funding Project:

Class Codes

Budget Plant Class	<input type="text"/>
Send to SE	<input type="text"/>
Miscellaneous Billing	
Misc Billing Status	<input type="text"/>
Required	
Force Billing Flag	<input type="text"/>
RDV Allocation Eligible	<input type="text"/>
Sanctioning Data	
DOA Amount	<input type="text"/>
Lower Tolerance	<input type="text" value=".90"/>
Strategy Type Name	<input type="text"/>
Upper Tolerance	<input type="text" value="1.10"/>

Indicates Display Only - [d]

Navigation: Record 1 of 1 [K] [<] [>] [>|]

Actions: Details, Accounts, Contacts, Class Codes, Justification, Tax Status, Authorizations, User Comment, Review, Related FPs, Audits, Delete FP, Cancel FP, Suspend FP, Estimates, Update, Print, Close

Funding Project Information
_ □ ×

New Approval Type

Funding Project **Revision**

Approval Type **Amount**

Status **Sent By** **Date Sent** **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Prost, Frank G"/>	<input checked="" type="checkbox"/>	6/7/2016	\$1,000,000

Budget Version

Rev

Record of 1